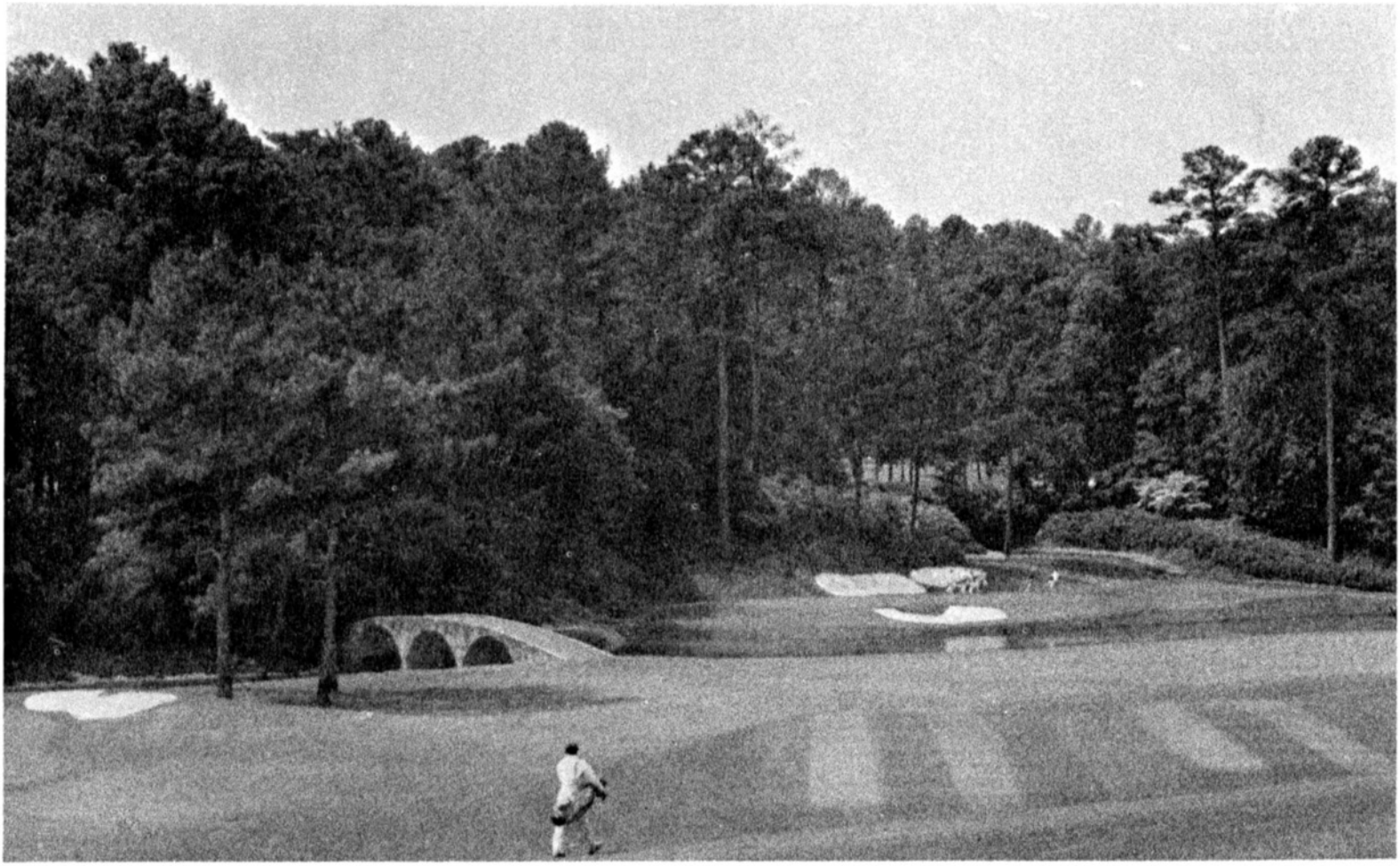
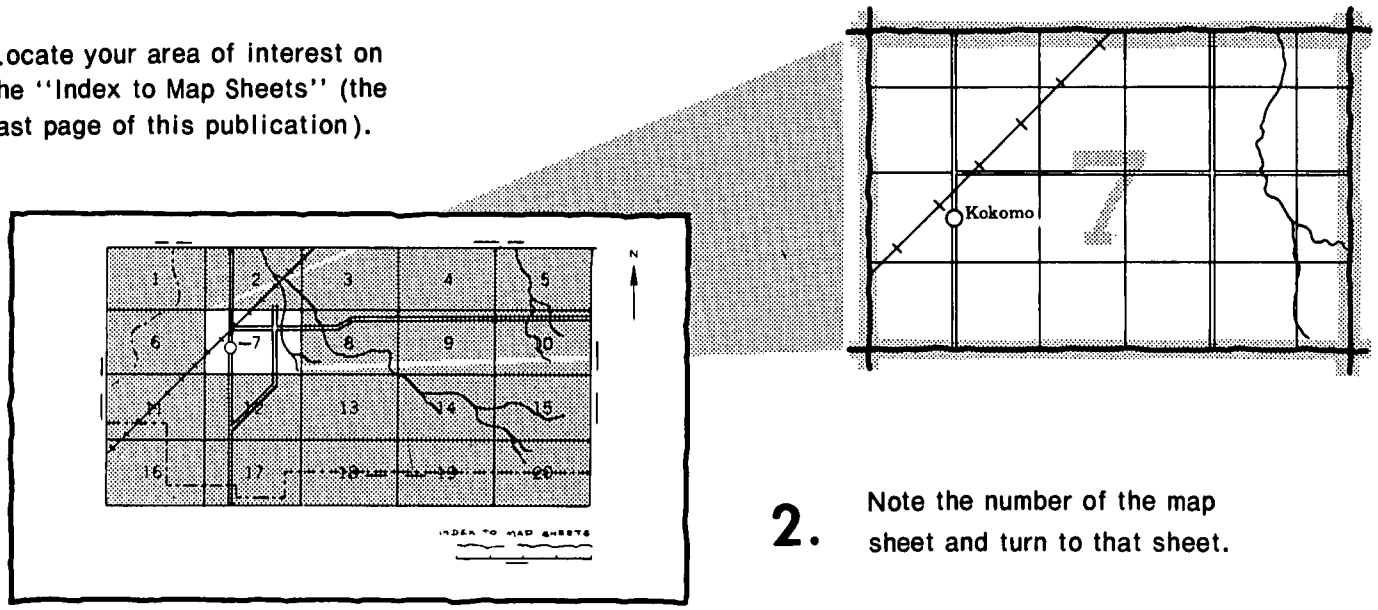
Soil Survey of
Richmond County
Georgia

United States Department of Agriculture, Soil Conservation Service
in cooperation with
University of Georgia, College of Agriculture, Agricultural Experiment Stations



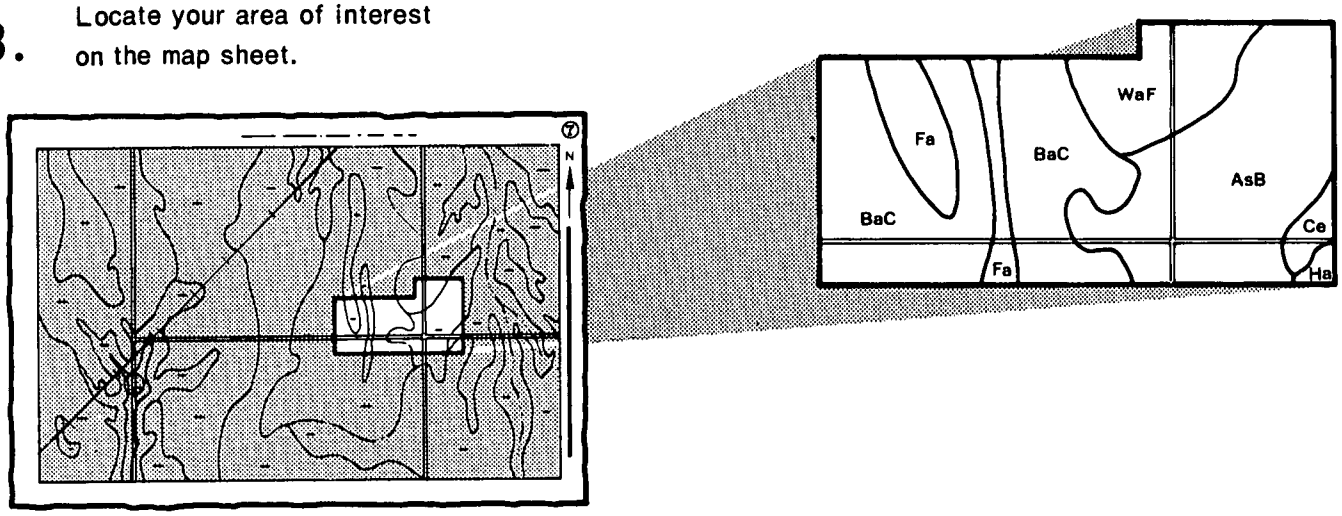
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

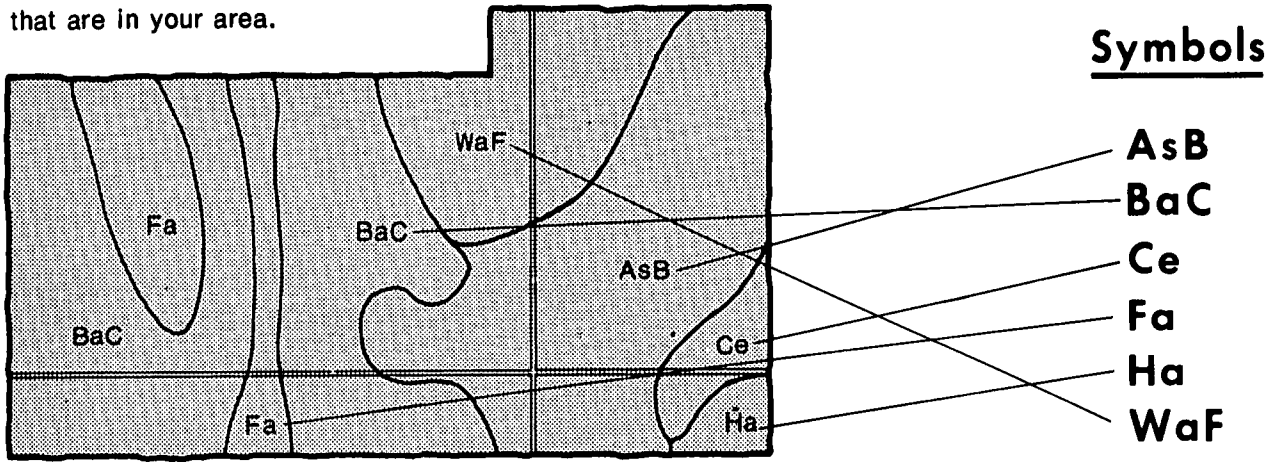


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.

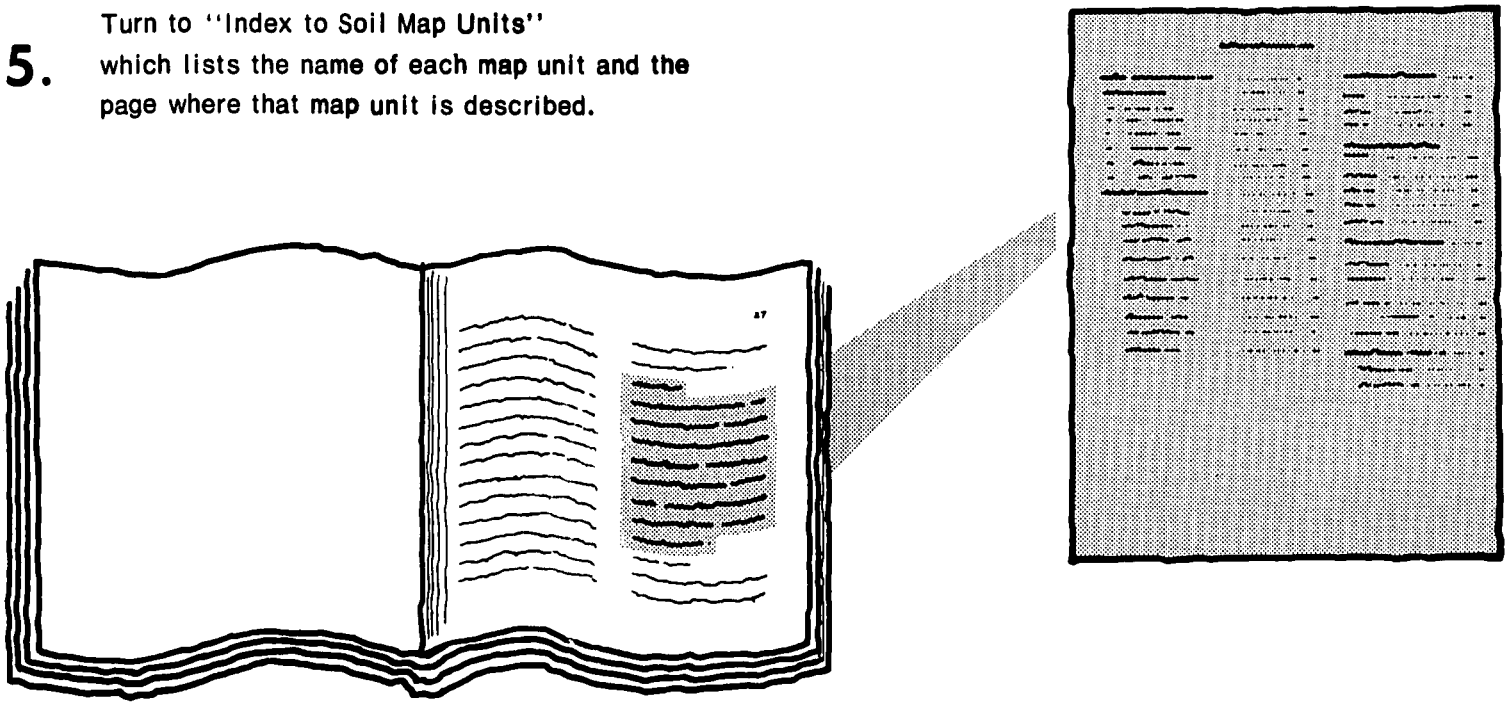


4. List the map unit symbols that are in your area.

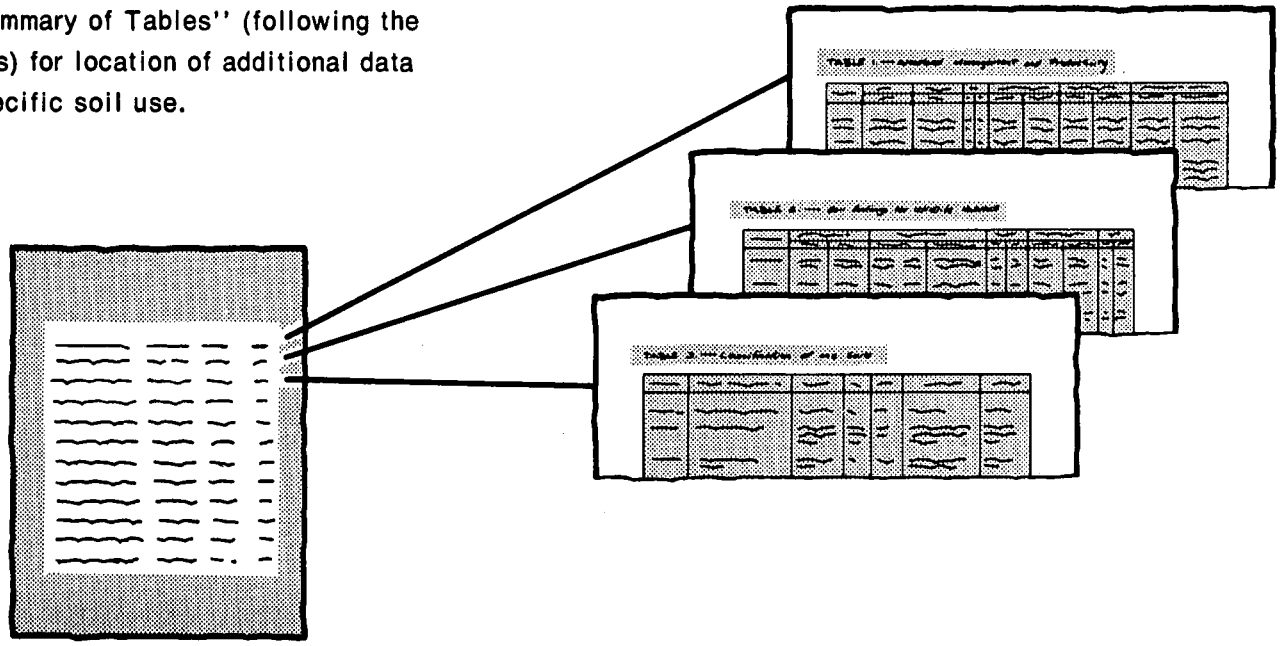


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1976-78. Soil names and descriptions were approved in 1978. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1978. This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Briar Creek Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

This survey supersedes the soil survey of Richmond County published in 1917 (*6*).

Cover: Each year a considerable amount of land in the survey area is committed to urban and recreation uses. This golf course is on Georgeville soils.

contents

soil series

Issued December 1981

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summary of tables

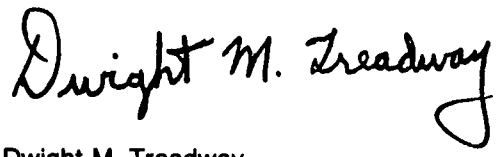
foreword

This soil survey contains information that can be used in land-planning programs in Richmond County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

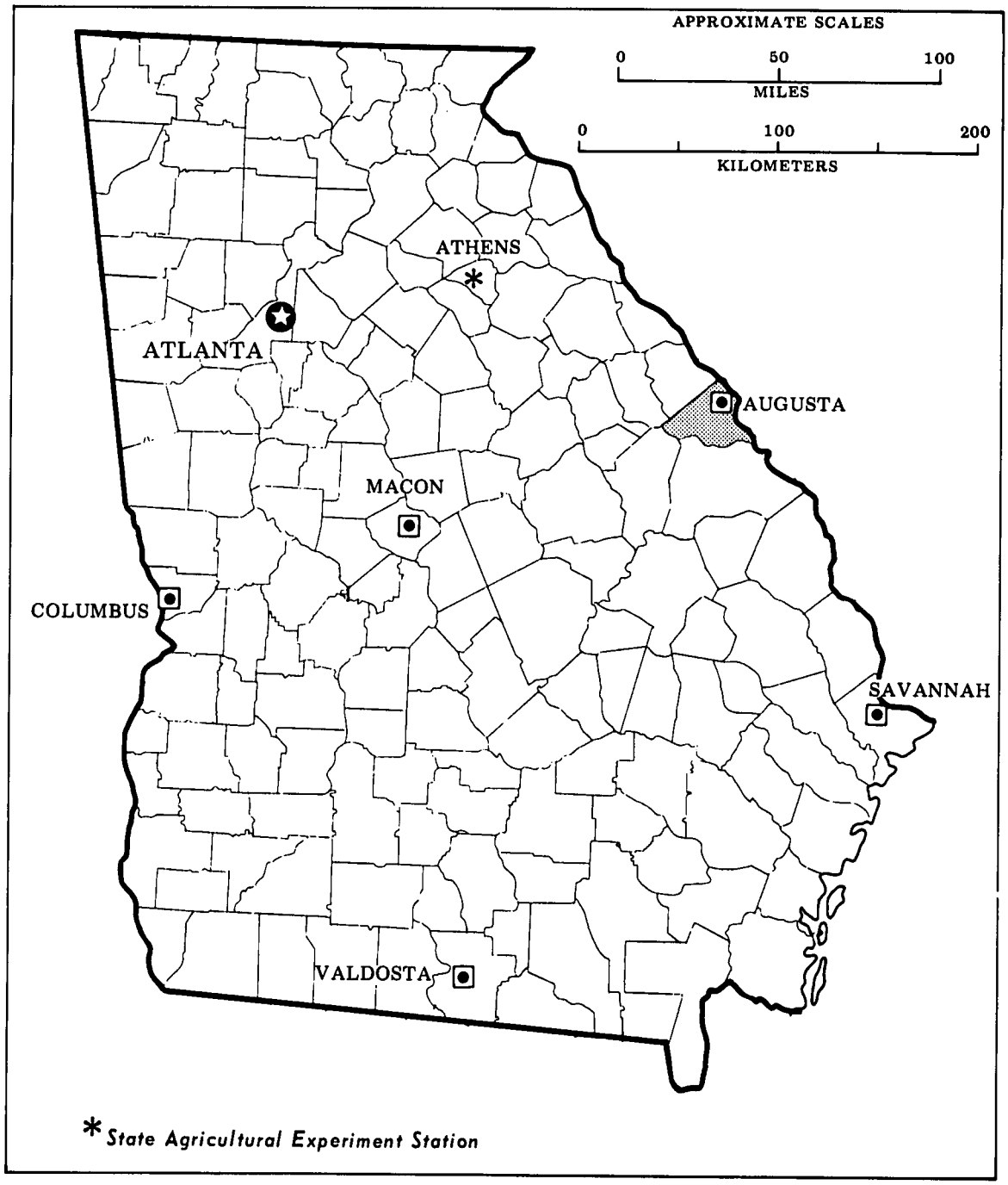
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



Dwight M. Treadway
State Conservationist
Soil Conservation Service



Location of Richmond County in Georgia.

soil survey of
Richmond County, Georgia

By Herschel L. Paulk, Soil Conservation Service

Fieldwork by Herschel L. Paulk, Jack R. Brown, Harry Hutchins, Edward E. Looper, and Tommy L. Coleman, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service, in cooperation with the University of Georgia, College of Agriculture, Agricultural Experiment Stations

Richmond County is in the east-central part of Georgia. Nearly triangular in shape, it has a land area of 323.3 square miles, or 206,912 acres. Augusta, the county seat and largest city, is in the northern part of the county near the head of navigation on the Savannah River. It is the primary trade center for east-central Georgia and west-central South Carolina.

Richmond County is in three major land resource areas. The northern part of the county is in the Southern Piedmont, the western and central parts are in the Carolina and Georgia Sand Hills, and the southern part is on the Southern Coastal Plain.

The Southern Piedmont consists mostly of very gently sloping to strongly sloping, well drained upland soils that have a loamy surface layer and a clayey subsoil. The Carolina and Georgia Sand Hills are dominantly very gently sloping to moderately steep, well drained to excessively drained upland soils that commonly have a thick sandy surface layer and a loamy subsoil or sandy underlying layers. In places, the subsoil is mostly firm and brittle. The Southern Coastal Plain is made up mostly of nearly level to gently sloping, well drained upland soils that have a sandy surface layer and a loamy subsoil.

About 25 percent of Richmond County is nearly level flood plains, stream terraces, and interstream divides. The soils on flood plains adjacent to the Savannah River are well drained to poorly drained. They are dominantly loamy throughout. The soils on flood plains adjacent to the major tributaries of the Savannah River are poorly drained and are loamy or sandy throughout. Soils on stream terraces and interstream divides are moderately well drained and poorly drained. They have a loamy surface layer and a loamy or clayey subsoil.

general nature of the survey area

In this section are facts about the climate, the settlement and history, the natural resources, and the physiography, relief, and drainage.

climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Augusta, Georgia, in the period 1951 to 1977. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 47 degrees F, and the average daily minimum temperature is 35 degrees. The lowest temperature on record, which occurred at Augusta on January 9, 1970, is 5 degrees. In summer the average temperature is 79 degrees, and the average daily maximum temperature is 90 degrees. The highest recorded temperature, which occurred at Augusta on July 24, 1952, is 106 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing

degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 46 inches. Of this, 23 inches, or 50 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 19 inches. The heaviest 1-day rainfall during the period of record was 5.95 inches at Augusta on August 29, 1964. Thunderstorms occur on about 60 days each year, and most occur in summer.

Snowfall is rare. In 50 percent of the winters, there is no measurable snowfall. In 20 percent, the snowfall, usually of short duration, is more than 1 inch. The heaviest 1-day snowfall on record was more than 13 inches.

The average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 70 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 8 miles per hour, in spring.

Severe local storms, including tornadoes, strike occasionally in or near the area. They are short and cause variable and spotty damage. Every few years in summer or autumn, a tropical depression or remnant of a hurricane that has moved inland causes extremely heavy rains for 1 to 3 days.

settlement and history

Richmond County was one of the eight original counties in Georgia. Formed from St. Pauls Parish in 1777, it was named in honor of the Duke of Richmond, Charles Lenos, a friend of the colonists in America. Columbia and McDuffie Counties and most of Warren and Jefferson Counties were later formed from parts of Richmond County.

The city of Augusta started as a busy trading post known as Fort Moore. In 1735 the fort was given official status by General James Oglethorpe, who renamed it Fort Augusta in honor of the Royal Princess Augusta, wife of the Prince of Wales. Augusta became the temporary capital of Georgia after Savannah fell to the British in 1778. It was twice captured by the British. From 1785 to 1795, it again served as Georgia's capital. In 1789, it was incorporated as a town and chartered as a city.

Most of the early settlers came from other parts of Georgia and from the Carolinas and Virginia. After the American Revolution, Augusta experienced a tobacco industry boom. It was a center of trade and the largest inland cotton market in the world. By 1820, Augusta was the terminus for riverboats, barges, wagon trains, and traders carrying staples and produce to be shipped to overseas markets.

By the 1900's Richmond County was well established in the vital role it continues to play in Georgia's industrial, military, transportation, medical, and educational development.

In 1978 the population of Richmond County was 133,901, and the population of Augusta was 53,492. In 1969 the total number of farms in Richmond County was 184; in 1974 it was 141. In 1969, the average size of farms was 215 acres. In 1974 the average size was 274 acres. Farmland made up 19.2 percent of the survey area in 1969 and 18.7 percent in 1974.

natural resources

Crops, livestock, and timber are marketable products produced from the soil. Fine kaolin that is used in making porcelain and the raw materials for brick, tile, and concrete products are mined from the soil.

Deep wells produce abundant water for domestic use and irrigation. Most of these wells are 75 to 400 feet deep. Numerous farm ponds and reservoirs provide water for livestock and for irrigation and recreation. The Savannah River and Brier Creek, which are permanent streams, are also important sources of water. Augusta obtains most of its water from the Savannah River. The river is controlled by a system of dams and levees. It affords a year-round navigable channel 90 feet wide and 9 feet deep. This channel provides water, transportation, and electrical energy for a growing industrial complex.

physiography, relief, and drainage

The extreme northern part of Richmond County is in the Southern Piedmont Major Land Resource Area. The Piedmont consists of broad to narrow ridgetops and long irregular hillsides dissected by numerous small winding drainageways. Slopes commonly are smooth and convex. The soils are very gently sloping to strongly sloping.

The northern and western parts of the county are in the Carolina and Georgia Sand Hills Major Land Resource Area. This area separates the Southern Piedmont from the Southern Coastal Plain. Ridgetops are smoother and broader than ridgetops in the Southern Piedmont. In places, however, the landscape is rolling or hilly and is dissected by many narrow valleys and drainageways.

The southern and southeastern parts of the county are in the Southern Coastal Plain Major Land Resource Area. Very gently sloping soils are on the broad ridgetops. The hillsides extend to the small drainageways, but they are not so steep as those of the Southern Piedmont and the Sand Hills.

Nearly level soils are on broad flood plains in the eastern and northern parts of the county and on the narrower flood plains near the major tributaries of the Savannah River. Dominantly nearly level soils on stream terraces and low-lying uplands are adjacent to the soils on flood plains.

The elevation along the Savannah River ranges from 100 feet to 140 feet. The elevation at Hephzibah, in the southern part of the county, is 435 feet. The elevation of some high ridges on Fort Gordon Reservation is 500 feet or more.

The Savannah River and its tributaries drain most of the county. The river separates the eastern edge of the county from South Carolina and generally flows southeasterly. Important tributaries of the Savannah River are Raes, Rocky, Butler, McBean, and Spirit Creeks. Butler, Raes, and Rocky Creeks drain the northern part of the county and all of Augusta. Spirit Creek drains the central part of the county. McBean Creek drains the southeastern part. Brier, Boggy Gut, and Sandy Run Creeks drain the southwestern part. These creeks and their small tributaries form a well defined trellis pattern throughout the county.

The soils on uplands are well drained to excessively drained. Some soils in saucer-shaped depressions, however, are poorly drained. Except in areas protected by the levee, the soils adjacent to the Savannah River and its tributaries are subject to overflow.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The soils in the survey area vary widely in their suitability for major land uses. A soil is well suited if it has properties that are favorable. It is moderately suited if it has properties that require special planning and management to obtain satisfactory performance. A soil is poorly suited if it has properties that are unfavorable.

Each map unit is rated for cultivated crops, woodland use, urban uses, and recreation uses. Cultivated crops predominantly are corn, soybeans, and cotton. Pasture crops mainly are improved bermudagrass and bahiagrass. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic.

soil descriptions

1. Georgeville-Wedowee

Very gently sloping to sloping, well drained soils that have a loamy surface layer and a predominantly firm clayey or loamy subsoil; on ridgetops and hillsides of the Southern Piedmont

The very gently sloping and gently sloping soils in this map unit are on long, broad ridgetops, and the sloping soils are on hillsides. These soils are in the northeastern part of the county. The landscape is smooth and convex. The slope range is 2 to 15 percent.

This unit makes up about 3 percent of the county. It is about 31 percent Georgeville soils, 21 percent Wedowee soils, and 48 percent soils of minor extent.

Georgeville soils have a predominantly red subsoil. Typically, the surface layer is dark brown loam about 5 inches thick. The subsoil extends to a depth of about 52 inches. The upper few inches is yellowish red silty clay loam, the middle part is red silty clay, and the lower part is red silty clay loam mottled with strong brown and light gray. Below this is weathered rock that crushes to silty clay loam.

Wedowee soils have a predominantly strong brown subsoil. Typically, the surface layer is dark grayish brown fine sandy loam 4 inches thick. The subsoil extends to a depth of 35 inches. The upper part is strong brown loam. The lower part is yellowish red clay loam mottled with pale yellow. The underlying weathered material is mottled strong brown and very pale brown sandy clay loam that has many fragments of highly weathered slate and phyllite.

Minor in this unit are the Grover, Goldston, Mecklenburg, and Wickham soils and Urban land. All occupy the same landscape as the major soils.

This map unit is mostly wooded. Some parts are residential subdivisions, shopping centers, and industry.

The unit is well suited to wood crops. In a few areas it is row cropped or pastured. Most soils on ridgetops are well suited to farming and urban uses. Most soils on hillsides, however, are not so well suited because of slope. Moderate permeability limits the use of these soils for septic tank absorption fields. Protection from erosion is needed on slopes that have no plant cover.

2. Troup-Lakeland

Predominantly very gently sloping and gently sloping, well drained soils that have a thick sandy surface layer and a friable loamy subsoil and excessively drained soils that are loose and sandy throughout; on ridgetops and hillsides of the Sand Hills

This map unit consists of very gently sloping soils on ridgetops and very gently sloping and gently sloping soils on hillsides. These soils occupy large areas throughout the Sand Hills. The landscape is smooth and convex. The slope range is 1 to 10 percent.

This unit makes up about 27 percent of the county. It is about 59 percent Troup soils, 25 percent Lakeland soils, and 16 percent soils of minor extent.

Troup soils are well drained. Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The subsurface layer, to a depth of 54 inches, is fine sand. It is light yellowish brown in the upper part and yellowish brown in the lower part. The subsoil extends to a depth of 80 inches or more. The upper few inches is strong brown sandy loam, and the rest is red sandy clay loam that has a few yellowish brown mottles.

Lakeland soils are excessively drained. Typically, the surface layer is about 4 inches thick. It is grayish brown throughout, but the lower part is mottled with light yellowish brown. The underlying material to a depth of 85 inches is sand. The upper few inches is light yellowish brown, and the rest is brownish yellow.

Minor in this unit are the Fuquay and Lucy soils, Udorthents, and Urban land. The minor soils and the Urban land occupy the same landscape as the major soils. Udorthents are in large borrow areas.

This map unit is mainly wooded or idle. Some areas are used for cultivated crops and residential subdivisions.

Most of the soils are moderately suited to farming and to the production of wood crops. Droughtiness is a concern in establishing and managing vegetation. This unit is well suited to most urban uses. Seepage, however, commonly is a concern if sanitary facilities are installed. The thick sandy surface layers or sandiness throughout the soil should be considered in planning recreation development.

3. Troup-Vaucluse-Ailey

Predominantly very gently sloping and gently sloping, well drained soils that have a predominantly sandy surface layer and a friable or mostly firm and brittle loamy subsoil; on ridgetops and hillsides of the Sand Hills

This map unit consists of very gently sloping soils on ridgetops and the very gently sloping and gently sloping soils on hillsides. These soils occur throughout the Sand Hills. The landscape is smooth and convex. In places, slopes are undulating. The slope range is 1 to 10 percent.

This unit makes up about 17 percent of the county. It is about 31 percent Troup soils, 22 percent Vaucluse soils, 21 percent Ailey soils, and 26 percent soils of minor extent.

Troup soils have a thick sandy surface layer and a friable loamy subsoil. Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The subsurface layer, to a depth of 54 inches, is fine sand. It is light yellowish brown in the upper part and yellowish brown in the lower part. The subsoil extends to a depth of 80 inches or more. The upper few inches is strong brown sandy loam, and the rest is red sandy clay loam that has a few yellowish brown mottles.

Vaucluse soils have a sandy surface layer and a firm and brittle loamy subsoil. Typically, the surface layer is dark brown loamy sand about 8 inches thick. The subsoil is sandy clay loam that extends to a depth of 60 inches or more. It is firm and brittle below a depth of about 20 inches. When dry, it is very hard. The upper part of the subsoil is strong brown mottled with red, the middle part is yellowish red mottled with red and brown, and the lower part is yellowish red mottled with yellowish brown and pale brown.

Ailey soils have a thick sandy surface layer and a firm and brittle loamy subsoil. Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 27 inches. The subsoil extends to a depth of 75 inches or more. The lower part of the subsoil is firm and brittle. When dry, it is very hard. The upper few inches of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam mottled with yellowish red, and the lower part is predominantly reddish yellow coarse sandy clay loam that is mottled with brownish yellow, red, and light brownish gray.

Minor in this unit are the Dothan, Fuquay, Lucy, and Orangeburg soils and Urban land. All occupy the same landscape as the major soils.

This map unit is mainly wooded or idle. In some areas it is used for cultivated crops and pasture. In several large areas, it is under residential development.

Most of the unit is poorly suited to farming and only moderately suited to the production of wood crops. It is well suited to most urban uses. Seepage from sanitary facilities, however, commonly is a concern in the sandier parts of the map unit. The sandy surface layer should be considered in planning recreation development. The firm and brittle subsoil layer in most of the soils should be considered in planning use and management. Protection from erosion is needed on slopes that have no plant cover.

4. Orangeburg-Lucy-Dothan

Nearly level to gently sloping, well drained soils that have a predominantly sandy surface layer and a friable loamy subsoil; on ridgetops and hillsides of the Southern Coastal Plain

The nearly level soils of this map unit are on ridgetops, and the very gently sloping and gently sloping soils are on ridgetops and hillsides. The landscape is smooth and convex. These soils are mainly in the southwestern and southern parts of the county. The slope range is 0 to 8 percent.

This unit makes up about 13 percent of the county. It is about 37 percent Orangeburg soils, 28 percent Lucy soils, 21 percent Dothan soils, and 14 percent soils of minor extent.

Orangeburg soils have a predominantly red subsoil. Typically, the surface layer is brown loamy sand about 10 inches thick. The subsoil is sandy clay loam that extends to a depth of 61 inches or more. The upper part is yellowish red. The lower part is red mottled with reddish yellow and strong brown.

Lucy soils have a thick sandy surface layer and a predominantly red subsoil. Typically, the surface layer is brown loamy sand about 11 inches thick. The subsurface layer is strong brown loamy sand about 18 inches thick. The subsoil is dominantly sandy clay loam that extends to a depth of 80 inches or more. It is yellowish red in the upper few inches, and the rest is red.

Dothan soils have a predominantly yellowish brown subsoil that is mottled in the lower part. Typically, the surface layer is dark brown loamy sand about 10 inches thick. The subsoil is dominantly sandy clay loam that extends to a depth of 65 inches or more. It is yellowish brown throughout. The lower part is mottled with red and brown. Plinthite is below a depth of about 38 inches. In the lower part of the subsoil, it ranges from 5 to 15 percent. In the surface layer and in the upper part of the subsoil, there are few nodules of ironstone.

Minor in the unit are the Faceville, Fuquay, Grady, and Troup soils. The well drained Faceville, Fuquay, and Troup soils occupy the same landscape as the major soils. The poorly drained Grady soils are in saucer-shaped depressions.

This map unit is used mainly for farming. A large area is used for the production of wood crops.

Most of the unit is well suited to crops and trees. The soils respond well to irrigation, and high yields can be obtained. Slopes that have no plant cover should be protected from erosion.

5. Troup-Vaucluse-Ailey

Strongly sloping and moderately steep, well drained soils that have a sandy surface layer and a friable or mostly firm and brittle loamy subsoil; on hillsides of the Sand Hills and the Southern Coastal Plain

The strongly sloping and moderately steep soils of this unit are on hillsides that are irregular, complex, and convex. These soils are mainly in the southern two thirds of the county. The slope range is 8 to 17 percent.

This unit makes up about 14 percent of the county. It is about 34 percent Troup soils, 15 percent Vaucluse soils, 13 percent Ailey soils, and 38 percent soils of minor extent.

Troup soils have a thick sandy surface layer and a friable loamy subsoil. Typically, the surface layer is brown fine sand about 9 inches thick. The subsurface layer, to a depth of 50 inches, is fine sand. It is light yellowish brown in the upper part and brownish yellow in the lower part. The subsoil extends to a depth of 65 inches or more. The upper few inches is yellowish brown sandy loam, and the rest is brownish yellow sandy clay loam mottled with brown and red.

Vaucluse soils have a sandy surface layer and a firm and brittle loamy subsoil. Typically, the surface layer is grayish brown loamy sand about 6 inches thick. The subsurface layer is brownish yellow loamy sand that extends to a depth of 11 inches. The subsoil is predominantly coarse sandy clay loam that extends to a depth of 70 inches or more. Below a depth of about 24 inches, it is firm and brittle. When dry, it is very hard. The upper part is mainly yellowish brown mottled with red, brown, and gray; the middle part is yellowish red mottled with brown, gray, and red; and the lower part is reddish yellow mottled with gray and yellow.

Ailey soils have a thick sandy surface layer and a firm and brittle loamy subsoil. Typically, the surface layer is grayish brown loamy sand about 5 inches thick. The subsurface layer is brownish yellow loamy sand that extends to a depth of 23 inches. The subsoil is predominantly sandy clay loam that extends to a depth of 66 inches or more. It is firm and brittle below a depth of about 28 inches. When dry, it is very hard. The upper part is yellowish brown; the middle part is strong brown mottled with yellowish brown, yellowish red, and brownish gray; and the lower part is reddish yellow mottled with red, strong brown, and brownish gray.

Minor in this unit are the Lakeland, Lucy, and Orangeburg soils and water areas. The excessively drained Lakeland soils and the well drained Lucy and Orangeburg soils occupy the same landscape as the major soils. The water areas mainly are ponds and reservoirs constructed in the major soils.

This map unit is mainly wooded. In some areas the unit is used for pasture and residential development. It is poorly suited to farming and is only moderately suited to the production of wood crops and to most urban uses. Slope is a concern of management for most uses. The sandy surface layer should be considered in planning recreation development. The firm and brittle subsoil layer in some of the soils should be considered in planning use and management. Protection from erosion is needed on slopes that have no plant cover.

6. Riverview-Chewacla-Chastain

Nearly level, well drained and somewhat poorly drained, loamy soils that are friable throughout and poorly drained soils that have a loamy surface layer and a firm clayey subsoil; on flood plains

The soils in this map unit are on flood plains along the Savannah River. They have low relief. Some are low lying and poorly drained, and others are higher lying and better drained. Brief periods of flooding are expected in winter and early in spring except in areas protected by the levee. The slope is less than 2 percent.

This unit makes up about 11 percent of the county. It is about 36 percent Riverview soils, 26 percent Chewacla soils, 17 percent Chastain soils, and 21 percent soils of minor extent.

Riverview soils are well drained. Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of about 33 inches. It is reddish brown loam over several inches of dark brown silt loam. The underlying material to a depth of about 65 inches is predominantly dark brown loamy fine sand. Mica flakes occur throughout the soil.

Chewacla soils are somewhat poorly drained. Typically, the surface layer is dark yellowish brown silt loam about 5 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is predominantly dark yellowish brown loam mottled with brown. The rest is predominantly light brownish gray silty clay loam mottled with brown. Mica flakes occur throughout the soil.

Chastain soils are poorly drained. Typically, the surface layer is about 4 inches thick. It is dark grayish brown loam mottled with yellowish brown and strong brown. The subsoil extends to a depth of 45 inches. It is gray throughout mottled with brown and red. The upper part is silty clay, and the lower part is clay. The underlying material to a depth of 65 inches is gray clay mottled with brown.

Minor in this unit are Hydraquents, Urban land, and water areas. Hydraquents are very poorly drained. They are in low areas at the base of foothills and in depressions. Urban land and the water areas occupy the same landscape as the major soils.

This unit is mostly wooded. In some areas, however, the soils are well drained and are used for cultivated crops or pasture.

The higher lying better drained soils are well suited to farming, and the lower lying less well drained soils are poorly suited. Most of this unit is well suited to the production of wood crops. Equipment limitations and seedling mortality, however, are management concerns on about half the map unit. Within the areas protected from flooding by the levee, there is considerable industrial and urban development. Clay has been mined for the manufacture of bricks, and the excavated areas are filled with water. Flooding and wetness are chief concerns in management.

7. Bibb-Osier

Nearly level, poorly drained, predominantly loamy soils that are friable and sandy soils that are loose; on flood plains

The soils in this map unit are on flood plains of the major tributaries along the Savannah River. Flooding is likely throughout the year, but frequent, brief periods of flooding can be expected in winter and in spring.

This unit makes up about 9 percent of the county. It is about 49 percent Bibb soils, 25 percent Osier soils, and 26 percent soils of minor extent.

Bibb soils are predominantly loamy throughout. Typically, the surface layer is fine sandy loam 16 inches thick. It is dark grayish brown in the upper part and grayish brown mottled with gray and yellowish brown in the lower part. To a depth of 40 inches are layers of gray and light gray silt loam mottled with strong brown. Between depths of 40 and 62 inches, layers are grayish brown and light gray loamy fine sand mottled with dark yellowish brown and white.

Osier soils are sandy throughout. Typically, the surface layer is brownish and is 13 inches thick. It is loamy fine sand in the upper part, and the rest is sand. Below this to a depth of 65 inches or more are layers of grayish sand or loamy fine sand.

Minor in this unit are the Dogue and Roanoke soils, Udorthents, and Urban land. The moderately well drained Dogue soils occupy higher lying stream terraces adjacent to the major soils. Roanoke soils are on low-lying stream terraces adjacent to the major soils. Udorthents and Urban land occupy the same landscape as the major soils.

This map unit is mostly wooded. The unit is moderately suited to the production of wood crops. Wetness is the main limitation to equipment use in managing and harvesting trees. Logging can be successfully performed, however, during the drier seasons. This unit is poorly suited to farming and urban use. Flooding and wetness are the chief concerns in management.

8. Dogue-Goldsboro-Roanoke

Predominantly nearly level, moderately well drained and poorly drained soils that have a loamy surface layer and a friable loamy or firm clayey subsoil; on stream terraces and low-lying uplands

The soils in this map unit are on stream terraces and low-lying uplands adjacent to the soils on flood plains along the Savannah River and its tributaries. Most of the soils are somewhat higher lying and slightly better drained than the soils on the adjacent flood plain. The slope is less than 3 percent.

This map unit makes up about 6 percent of the county. It is about 37 percent Dogue soils, 15 percent Goldsboro soils, 14 percent Roanoke soils, and 34 percent soils of minor extent.

Dogue soils are moderately well drained and are on stream terraces. Typically, the surface layer is grayish brown fine sandy loam about 8 inches thick. The subsoil is predominantly clay that extends to a depth of about 56 inches. The upper part is yellowish brown mottled with gray and brown and the lower part is gray mottled with mainly reddish brown and strong brown. The underlying material is mottled gray and light gray sandy clay loam to a depth of 62 inches or more.

Goldsboro soils are moderately well drained and are on low-lying uplands. Typically, the surface layer is dark grayish brown sandy loam about 6 inches thick. The subsurface layer, to a depth of 10 inches, is brown loamy sand. The subsoil is predominantly sandy clay loam that extends to a depth of 65 inches or more. The upper part is brownish yellow, the middle part is brownish yellow mottled with brownish gray and strong brown, and the lower part is mottled red, brown, and gray.

Roanoke soils are poorly drained and are on low-lying stream terraces. Typically, the surface layer is dark gray loam about 5 inches thick. The subsoil extends to a depth of 70 inches. The upper few inches is dark gray

clay loam, the middle part is gray clay mottled with brown and red, and the lower part is mottled gray, brown, and red sandy clay loam. The underlying material is mottled gray, brown, and red sandy loam to a depth of 96 inches or more.

Minor in this map unit are the Altavista, Rains, and Wickham soils, Udorthents, and Urban land. The moderately well drained Altavista soils and the well drained Wickham soils are on stream terraces. Poorly drained Rains soils are on low-lying stream terraces. Udorthents and Urban land occupy the same landscape as the major soils.

This unit is mostly wooded and urban. A few of the slightly higher lying and better drained areas are used for cultivated crops and pasture.

The unit is well suited to the production of wood crops. Wetness, however, is a limitation to equipment use in managing and harvesting the trees. Commonly, logging is successful during the drier seasons. This unit is moderately suited to farming and urban use. Wetness is the chief concern in management.

broad land use considerations

In 1979 about 12,000 acres, or nearly 6 percent of Richmond County, was urban. About 14,000 acres more was committed to nonfarm use. Each year a considerable amount of land is developed for urban uses. Deciding what land should be used for urban development is an important issue in the county. In general, the soils that are well suited to cultivated crops are also well suited to urban development. The general soil map in this survey can help in planning the general outline of urban areas, but it cannot be used in selecting sites for specific urban structures. Data on specific soils in this survey should be used in planning future land use patterns. See the section "Detailed soil map units."

Areas in which the soils are so unfavorable that urban development is extremely limited are not extensive in the county. On some of the flood plain soils in Riverview-Chewacla-Chastain and Bibb-Osier units flooding and wetness are severe limitations. Soils on stream terraces and low-lying uplands in the Dogue-Goldsboro-Roanoke unit are seasonally wet. Soils in the Troup-Vaucluse-Ailey unit on upland hillsides are only moderately suited to most urban uses because slope makes development costly.

In large areas of the county, the soils on uplands can be developed for urban uses at a lower cost than other soils in the survey area. These soils are in the Georgeville-Wedowee unit, the Orangeburg-Lucy-Dothan unit, the Troup-Vaucluse-Ailey unit, and the Troup-Lakeland unit. The Orangeburg-Lucy-Dothan unit is excellent farmland. Its value as cropland should be considered in planning future land use patterns. Soils in the Orangeburg-Lucy-Dothan and the Georgeville-Wedowee units are well suited to nurseries and specialty crops. They are well drained. Thus, they warm up earlier in spring than the wetter soils.

Most soils in the county are well suited or moderately suited to trees. The soils in the Orangeburg-Lucy-Dothan, the Dogue-Goldsboro-Roanoke, and the Riverview-Chewacla-Chastain units commonly produce higher yields than the soils in other units. Trees do not grow so well on soils of the less productive Troup-Lakeland and Bibb-Osier units.

The Troup-Vaucluse-Ailey unit on hillsides is suited to parks and recreation areas. Hardwood forests enhance the beauty of many of these areas. Undrained areas of the Riverview-Chewacla-Chastain and Bibb-Osier units are good for nature study. They provide habitat for many species of wildlife.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Troup sand, 1 to 5 percent slopes, is one of several phases in the Troup series.

Some map units are made up of two or more major soils. These map units are called soil complexes, soil associations, or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Vaucluse-Ailey complex, 5 to 8 percent slopes, is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar Chewacla-Riverview association, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Bibb and Osier soils is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, mines is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

AgB—Ailey loamy sand, 2 to 5 percent slopes. This deep, well drained, very gently sloping soil is on ridgetops and hillsides in uplands of the Sand Hills. Slopes are smooth and convex. Areas are 10 to 80 acres.

Typically, the surface layer is grayish brown loamy sand about 6 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 25 inches. The subsoil is sandy clay loam that extends to 65 inches or more. The lower part of the subsoil is firm and brittle when moist and very hard when dry. The upper few inches of the subsoil is brownish yellow mottled with yellowish red, the middle part is yellowish brown mottled with yellowish red and red, and the lower part dominantly is mottled with yellowish brown, red, light brownish gray, and light red.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It

has good tilth and can be worked throughout a wide range of moisture content. Permeability is slow in the brittle part of the subsoil. The available water capacity is low. Roots are restricted mainly to the surface layer and the upper part of the subsoil.

Included with this soil in mapping are small areas of Fuquay, Troup, and Vaucluse soils. Also included are small areas where the lower part of the subsoil is friable.

This soil is poorly suited to farming because of low available water capacity and low fertility. It is moderately suited to hay and pasture. Returning crop residue to the soil increases the available water capacity and decreases leaching of plant nutrients.

This soil is moderately suited to slash pine and longleaf pine. Equipment limitation and seedling mortality are management concerns.

This soil is well suited to most urban uses. Slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields, but in most places, good design and construction can compensate for this limitation. The sandy surface layer is a limitation for most recreation uses.

The capability subclass is IIIs. The woodland suitability subclass is 4s.

AgC—Alley loamy sand, 5 to 8 percent slopes. This deep, well drained, gently sloping soil is on ridgetops and hillsides in the uplands of the Sand Hills. Slopes are smooth and convex. Areas are 10 to 150 acres.

Typically, the surface layer is dark grayish brown loamy sand, about 4 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 27 inches. The subsoil extends to 75 inches or more. The upper few inches of the subsoil is brownish yellow sandy loam, the middle part is brownish yellow sandy clay loam mottled with yellowish red, and the lower part is dominantly reddish yellow coarse sandy clay loam mottled with brownish yellow, red, and light brownish gray. The lower part of the subsoil is firm and brittle when moist and very hard when dry.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is slow in the brittle part of the subsoil. The available water capacity is low. The root zone is restricted mainly to the surface layer and the upper part of the subsoil.

Included with this soil in mapping are small areas of Fuquay, Troup, and Vaucluse soils. Also included are small areas where the lower part of the subsoil is friable.

This soil is poorly suited to farming because of low available water capacity and low fertility. It is moderately suited to hay and pasture. Returning crop residue to the soil increases the available water capacity and decreases leaching of plant nutrients.

This soil is moderately suited to slash pine and longleaf pine. Equipment limitation and seedling mortality are concerns.

This soil is well suited to most urban uses. Slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. In most places, good design and construction can compensate for this limitation. The sandy surface layer is a limitation for most recreation uses.

The capability subclass is IVs. The woodland suitability subclass is 4s.

AgD—Alley loamy sand, 8 to 12 percent slopes. This deep, well drained, sloping soil is on hillsides in the uplands of the Sand Hills. Slopes are short, irregular, and convex. Areas are 10 to 60 acres.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 28 inches. The subsoil is dominantly sandy clay loam that extends to 62 inches or more. The upper few inches is brownish yellow, the middle part is brownish yellow mottled with strong brown, light brownish gray, and red, and the lower part is mottled yellowish brown, red, and light brownish gray. The lower part of the subsoil is firm and brittle when moist and hard when dry.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability in the brittle part of the subsoil is slow. The available water capacity is low. Tilth is good. Roots are restricted mainly to the surface layer and upper part of the subsoil.

Included with this soil in mapping are a few areas of Lucy, Troup, and Vaucluse soils. Also included are a few areas where the lower part of the subsoil is friable.

This Ailey soil is poorly suited to farming because of low available water capacity, low fertility, and slope. It is moderately suited to pasture.

This soil is moderately suited to slash pine and longleaf pine. Equipment limitation and seedling mortality are management concerns.

This soil is only moderately suited to most urban uses. Slope is a limitation for sanitary facilities, community development, and playgrounds. Slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. These limitations can be overcome to some extent by good design and construction or by modifying the slope. The sandy surface layer is a limitation for most recreation uses.

The capability subclass is VIIe. The woodland suitability subclass is 4s.

Av—Altavista sandy loam, 0 to 2 percent slopes. This deep, moderately well drained, nearly level soil is on stream terraces slightly downstream from the uplands of the Southern Piedmont. Slopes are smooth and slightly concave. Occasional very brief flooding is probable in spring. Areas are 10 to 125 acres.

Typically, the surface layer is dark grayish brown sandy loam about 8 inches thick. The subsoil is sandy

clay loam that extends to a depth of about 41 inches. The upper few inches is light yellowish brown, the middle part is brownish yellow mottled with light yellowish brown, pale brown, brownish gray, and reddish yellow, and the lower part is mottled brownish yellow, yellowish brown, gray, and red. The underlying material is mottled brownish yellow and light gray sandy loam to 63 inches and light gray sandy clay mottled with brownish yellow and red to 70 inches or more.

This soil is low in natural fertility and organic matter content. It ranges from very strongly acid to medium acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. Although the root zone is deep, root growth is limited because a water table commonly is at a depth of 1.5 to 2.5 feet in winter and spring.

Included with this soil in mapping are areas of soils that are similar to this Altavista soil but have a loamy coarse sand or loamy sand surface layer and some areas where the surface layer is more than 20 inches thick. Also included are small areas of Dogue fine sandy loam.

This Altavista soil is well suited to farming. It is somewhat limited because of wetness, but ditches or buried drains commonly compensate for this limitation. This soil is easy to keep in good tilth if crop residue is returned. Minimum tillage and cover crops, including grasses and legumes, increase organic matter content.

This soil is well suited to loblolly pine, yellow poplar, and sweetgum. Wetness is the main limitation to equipment use. The wood crop can be managed and harvested during the drier seasons.

This soil is poorly suited to most urban uses. The wetness and flooding limitations could be overcome only by artificial drainage and flood control.

The capability subclass is IIw. The woodland suitability subclass is 2w.

BO—Bibb and Osier soils. This undifferentiated group consists of nearly level, poorly drained soils on the flood plains of major streams on the Southern Coastal Plain. It is frequently flooded for brief periods, mostly late in winter and early in spring. The slope range is 0 to 2 percent. Areas are 50 to 300 acres.

A typical mapped area is about 60 percent Bibb soils and 35 percent Osier soils. The pattern and proportion of the soils varies, however, in individual units.

About 5 percent of each mapped area is included areas of Dogue, Rains, and Roanoke soils. The moderately well drained Dogue soil is on low-lying stream terraces. The Rains and Roanoke soils are on low-lying flats near the major streams.

Typically, the Bibb soils have a fine sandy loam surface layer 16 inches thick that is dark grayish brown in the upper part and grayish brown mottled with gray and yellowish brown in the lower part. To a depth of 40 inches are layers of gray silt loam mottled with strong brown. Layers between 40 and 62 inches are grayish brown and light gray loamy fine sand mottled with dark yellowish brown and white.

The Bibb soils are very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is medium. The water table is within 0.5 foot to 1.5 feet of the surface in winter and spring. It limits roots.

Typically, the Osier soils have a brownish surface layer 13 inches thick that is loamy fine sand in the upper few inches and sand in the lower part. To a depth of 65 inches or more are layers of grayish sand or loamy fine sand.

The Osier soils are very strongly acid or strongly acid throughout. Permeability is rapid, and the available water capacity is low. The water table is within 1 foot of the surface in winter and spring.

These soils are wooded. They are moderately suited to loblolly pine, slash pine, sweetgum, and water tupelo. Wetness is the main limitation to the use of equipment. Wood crops commonly can be managed and harvested during the drier months.

These soils are poorly suited to farming and urban use because of wetness and flooding. Only artificial drainage and extensive flood control can compensate for these limitations.

The capability subclass is Vw. The woodland suitability subclass is 2w for the Bibb soils and 3w for the Osier soils.

Ca—Chastain loam. This deep, nearly level, poorly drained soil is in slight depressions on flood plains of the Savannah River. This soil is frequently flooded for very long periods in winter and spring. Areas are 25 to 200 acres. Slope is less than 1 percent.

Typically, the surface layer is about 4 inches thick. It is dark grayish brown loam and has yellowish brown and strong brown mottles. The subsoil extends to a depth of 45 inches. It is gray throughout and is mottled with brown and red. It is silty clay in the upper part and clay in the lower part. The underlying material to 65 inches is gray clay mottled with brown.

This soil is medium in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and the available water capacity is medium or high. Tilth is fair. Although the root zone is deep, the water table, which commonly is within 1 foot of the surface in winter and spring, limits root growth.

Included with this soil in mapping are small areas of Chewacla soils.

This soil is well suited to loblolly pine, American sycamore, and yellow poplar. Wetness and flooding limit the use of equipment and cause high seedling mortality. Wood crops can be managed and harvested during the drier periods. Artificial drainage is needed to prevent high seedling mortality.

This soil is poorly suited to farm, urban, and recreation uses because of flooding and wetness. Only extensive

flood control and artificial drainage can compensate for these limitations.

The capability subclass is VIw. The woodland suitability subclass is 2w.

CC—Chewacla-Chastain association. This map unit consists of nearly level soils on flood plains. These soils formed in loamy and clayey sediment from the uplands of the Southern Piedmont. They are frequently flooded for brief periods, mostly in winter and early in spring. The slope range is 0 to 2 percent. Areas are 100 to 900 acres.

The map unit consists of somewhat poorly drained Chewacla soils and, in lower lying areas, poorly drained Chastain soils. The soils occur in a regular pattern. The composition of this unit is variable, but the mapping has been controlled well enough for interpretations to be made for the expected uses.

The somewhat poorly drained Chewacla soils make up about 50 percent of the map unit. Typically, the surface layer is dark yellowish brown fine sandy loam about 3 inches thick. The subsoil extends to a depth of 42 inches. The upper part is dark brown sandy clay loam mottled with grayish brown and very dark gray, the middle part is brown sandy clay loam mottled with yellowish brown and gray, and the lower part is gray sandy clay mottled with strong brown and brownish yellow. The underlying material is gray clay mottled with strong brown and brownish yellow.

The Chewacla soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep. A water table commonly is within 0.5 foot to 1.5 feet of the surface in winter and early in spring.

The poorly drained Chastain soils make up about 40 percent of the map unit. Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsurface layer, to a depth of 16 inches, is brown silt loam mottled with pale brown and yellowish red. The subsoil extends to 32 inches. It is gray clay mottled with yellowish brown and black. From 32 to 62 inches or more is gray clay mottled with yellowish brown and black.

The Chastain soils are medium in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and the available water capacity is medium or high. Tilth is fair. The root zone is deep. The water table commonly is within 1 foot of the surface in winter and early in spring.

Included with these soils in mapping are small areas of Riverview soils.

The soils in this unit are poorly suited to farming because of flooding and wetness. They are moderately suited to pasture.

These soils are well suited to loblolly pine, American sycamore, and yellow poplar. Wetness and flooding limit the use of equipment. Wood crops can be managed and harvested during the drier periods. Artificial drainage is needed in most of the lower lying areas to prevent high seedling mortality.

These soils are poorly suited to urban uses because of wetness and flooding. Only extensive flood control and artificial drainage can compensate for these limitations.

The capability subclass is IIIw. The woodland suitability subclass is 1w for the Chewacla soils and 2w for the Chastain soils.

CR—Chewacla-Riverview association. This map unit consists of nearly level soils on flood plains. These soils formed in loamy sediment from the uplands of the Southern Piedmont. They are frequently flooded for brief periods in winter and early in spring. The slope range is 0 to 2 percent. Areas are 25 to 500 acres.

The map unit consists of somewhat poorly drained Chewacla soils in the lower lying areas and well drained Riverview soils on natural levees adjacent to stream channels. The soils are in a regular pattern. The composition of the unit is variable, but the mapping has been controlled well enough for interpretations to be made for the expected uses.

The Chewacla soils make up about 60 percent of the map unit. Typically, the surface layer is dark yellowish brown silt loam about 5 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is dominantly dark yellowish brown loam mottled with brown. The lower part is dominantly light brownish gray silty clay loam mottled with brown. Flakes of mica are throughout the soil.

The Chewacla soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep. The water table commonly is within 0.5 foot to 1.5 feet of the surface in winter and early in spring.

The Riverview soils make up about 35 percent of the map unit. Typically, the surface layer is dark brown loam about 6 inches thick. The subsoil is silty clay loam that extends to a depth of about 38 inches. It is reddish brown throughout. The lower part is mottled with brown. The underlying material to about 65 inches is reddish brown silt loam mottled with light brown.

Riverview soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep. The water table commonly is within 3 to 5 feet of the surface in winter and early in spring.

Included with these soils in mapping are small areas of Chastain soils and areas of soils that are similar to Chewacla soils but are not so well drained.

The soils in this unit are only moderately suited to farming because of the flooding. They are well suited to pasture.

These soils are well suited to loblolly pine and yellow poplar. Wetness and flooding limit the use of equipment, but wood crops can be managed and harvested during the drier periods.

These soils are poorly suited to urban uses because of flooding. Only extensive flood control can compensate for this limitation.

The capability subclass is IIIw. The woodland suitability subclass is 1w for the Chewacla soils and 1o for the Riverview soils.

DgA—Dogue fine sandy loam, 0 to 3 percent slopes. This deep, moderately well drained, nearly level and very gently sloping soil is on stream terraces slightly downstream from the uplands of the Southern Piedmont. Slopes are smooth and slightly concave. Areas are 10 to 125 acres.

Typically, the surface layer is grayish brown fine sandy loam about 8 inches thick. The subsoil is dominantly clay that extends to a depth of about 56 inches. The upper part is yellowish brown mottled with gray and brown, and the lower part is gray mottled with mainly reddish brown and strong brown. The underlying material is mottled gray and light gray sandy clay loam to 62 inches or more.

This soil is low in natural fertility and organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderately slow, and the available water capacity is medium. Tilth is good. The root zone is deep. A water table commonly is at a depth of 2 to 3 feet in winter and early in spring.

Included with this soil in mapping are areas where the subsoil extends to a depth of 60 inches or more, a few areas where the surface layer is loamy coarse sand or loamy sandy, and areas where the upper part of the subsoil is reddish. Also included are small areas of Altavista sandy loam.

This Dogue soil is well suited to farming. It is somewhat limited because of wetness, but ditches commonly compensate for this limitation. The soil is easy to keep in good tilth if crop residue is returned. Minimum tillage and cover crops, including grasses and legumes, increase the organic matter content.

This soil is well suited to loblolly pine, slash pine, yellow poplar, and sweetgum (fig. 1). Wetness is the main limitation to equipment use. Wood crops can be managed and harvested during the drier seasons.

This soil is moderately suited to most urban uses. Moderately slow permeability in the subsoil limits the use of this soil for septic tank absorption fields, but in most places good design and installation can compensate for this limitation. Artificial drainage commonly can compensate for wetness.

The capability subclass is IIw. The woodland suitability subclass is 2w.

Figure 1.—This stand of loblolly pine is on Dogue fine sandy loam, 0 to 3 percent slopes, which is well suited to woodland use.

DhA—Dogue-Urban land complex, 0 to 3 percent slopes. This complex consists of areas of Dogue soil and Urban land so intermingled that they could not be mapped separately at the scale selected. This nearly level and very gently sloping complex is on stream terraces slightly downstream from the uplands of the Southern Piedmont. Areas are 10 to 60 acres.

Dogue fine sandy loam makes up about 55 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil is dominantly brownish yellow clay loam that extends to a depth of 32 inches. The lower part is mottled with brownish gray and strong brown. The underlying material to 60 inches or more is brownish yellow sandy loam mottled with light brownish gray and strong brown.

This soil is low in natural fertility and organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderately slow, and the available water capacity is medium. Tilth is good. The root zone is deep. A water table commonly is at a depth of 2 to 3 feet in winter and early in spring.

Urban land makes up about 45 percent of each mapped area. Most areas are shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Altavista and Wickham soils.

The Dogue soil is moderately suited to most urban uses. It is well suited to home vegetable gardens and to the plants commonly used in landscaping. Moderately slow permeability in the subsoil limits the use of this soil for septic tank absorption fields. In most places, good design and installation can compensate for this limitation. Artificial drainage commonly can compensate for wetness.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

DoA—Dothan loamy sand, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on ridgetops in the uplands of the Southern Coastal Plain. Areas are 10 to 50 acres.

Typically, the surface layer is dark brown loamy sand about 10 inches thick. The subsoil is dominantly sandy clay loam that extends to a depth of 65 inches or more. It is yellowish brown throughout. The lower part is mottled with red and brown. Below a depth of 38 inches, it is 5 to 15 percent plinthite. The surface layer and the upper part of the subsoil contain a few nodules of ironstone.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few small areas of Fuquay soils. Also included are areas where the surface layer and subsoil are 5 percent or more ironstone nodules and a few areas where the subsoil is sandy clay.

This soil is well suited to farming. During dry seasons, it responds to irrigation and produces high yields. Minimum tillage and cover crops, including grasses and legumes, increase the organic matter content.

This soil is well suited to slash pine and loblolly pine. There are no significant limitations to woodland use or management.

This soil is well suited to most urban uses. Moderately slow permeability in the lower part of the subsoil limits the use of the soil for septic tank absorption fields. In most places good design and construction can compensate for this limitation.

The capability class is I. The woodland suitability subclass is 2o.

DoB—Dothan loamy sand, 2 to 5 percent slopes. This deep, well drained, very gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes commonly are smooth and convex. Areas are 5 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand about 10 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 13 inches. The subsoil is dominantly sandy clay loam that extends to 60 inches or more. The upper part is brownish yellow, and the lower part is mottled with yellowish brown, yellowish red, red, and light brownish gray. The subsoil below 44 inches is 5 to 20 percent plinthite. The surface layer and the upper part of the subsoil contain a few nodules of ironstone.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few areas of Fuquay soils. Also included are soils that contain 5 percent or more ironstone nodules in the surface layer and subsoil. In a few areas, the subsoil is sandy clay.

This soil is well suited to farming. During dry seasons, it responds to irrigation and produces high yields. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate hazard if the soil is cultivated. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and help to control erosion.

This soil is well suited to loblolly pine and slash pine. There are no significant limitations to woodland use or management.

This soil is well suited to most urban uses. Moderately slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields, but in most places this limitation can be overcome by increasing the size of the absorption area or by modifying the design of the field.

The capability subclass is IIe. The woodland suitability subclass is 2o.

DuB—Dothan-Urban land complex, 0 to 5 percent slopes. This complex consists of areas of Dothan soil and Urban land so intermingled that they could not be mapped separately at the scale selected. It is nearly level and very gently sloping. It is in low-lying areas in uplands of the Southern Coastal Plain. Areas are 10 to 80 acres.

Dothan loamy sand makes up about 55 percent of each mapped area. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 12 inches. The subsoil is dominantly sandy clay loam that extends to 65 inches or more. It is brownish yellow in the upper part, brownish yellow mottled with red and strong brown in the middle part, and mottled brownish yellow, red, and brownish gray in the lower part. Below 42 inches the subsoil is 5 to 15 percent plinthite. The surface layer and the upper part of the subsoil contain nodules of ironstone.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 35 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Fuquay and Goldsboro soils.

The Dothan soil is well suited to most urban uses. Moderately slow permeability in the lower part of the subsoil limits the use of this soil for septic tank absorption fields. In most places this limitation can be overcome by increasing the size of the absorption area or by modifying the design of the field. Home vegetable gardens and the plants commonly used for landscaping grow well. Until permanent plant cover is established, the hazard of erosion is severe in the more sloping part of the map unit. Tillage across slope and winter cover crops reduce erosion.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

FeA—Faceville sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is in broad upland areas of the Southern Coastal Plain. Areas are 10 to 70 acres.

Typically, the surface layer is dark brown sandy loam about 8 inches thick. The subsoil is sandy clay that extends to a depth of about 65 inches. The upper part is yellowish red, the middle part is red, and the lower part is red mottled with strong brown.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few areas of Dothan and Orangeburg soils.

This Faceville soil is well suited to farming. During dry seasons, it responds to irrigation and produces high yields. It is easy to keep in good tilth if crop residue is returned. Minimum tillage and cover crops, including grasses and legumes, increase the organic matter content.

This soil is moderately suited to loblolly pine and slash pine. There are no significant limitations to woodland use or management.

This soil is well suited to most urban uses. The clayey subsoil is a limitation to some uses. In most places good design and construction can compensate for this limitation.

The capability class is I. The woodland suitability subclass is 3o.

FeB—Faceville sandy loam, 2 to 5 percent slopes. This deep, well drained, very gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes commonly are smooth and convex. Areas are 10 to 40 acres.

Typically, the surface layer is dark grayish brown sandy loam about 8 inches thick. The subsoil is dominantly sandy clay that extends to a depth of 62 inches or more. The upper few inches is strong brown, the middle part is yellowish red, and the lower part is red mottled with strong brown and light yellowish brown.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few areas of Dothan and Orangeburg soils.

This soil is well suited to farming. During dry seasons, it responds to irrigation and produces high yields. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate hazard if the soil is cultivated.

Minimum tillage and cover crops, including grasses and legumes, reduce runoff and the hazard of erosion.

This soil is moderately suited to loblolly pine and slash pine. There are no significant limitations to woodland use or management.

This soil is well suited to most urban uses. The clayey subsoil is a limitation to some uses. In most places good design and construction can compensate for this limitation.

The capability subclass is IIe. The woodland suitability subclass is 3o.

FeC—Faceville sandy loam, 5 to 8 percent slopes. This deep, well drained, gently sloping soil is on hillsides between ridgetops and drainageways in the uplands of the Southern Coastal Plain. Slopes are irregular. Areas are 5 to 40 acres.

Typically, the surface layer is grayish brown sandy loam about 8 inches thick. The subsoil is red and extends to a depth of 65 inches or more. It is sandy clay loam in the upper part and sandy clay in the lower part.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Dothan and Orangeburg soils.

This soil is only moderately suited to farming because the slopes are irregular. It is well suited to hay and pasture. Erosion is a severe hazard if the soil is cultivated. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and the hazard of erosion and help to maintain tilth.

This soil is moderately suited to loblolly pine and slash pine. There are no significant limitations to woodland use or management.

This soil is well suited to most urban uses. The clayey subsoil is a limitation to some uses, but in most places good design and construction can compensate for this limitation.

The capability subclass is IIIe. The woodland suitability subclass is 3o.

FsB—Fuquay loamy sand, 1 to 5 percent slopes. This deep, well drained, nearly level and very gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes are mostly smooth and convex. Areas are 5 to 100 acres.

Typically, the surface layer is grayish brown loamy sand about 5 inches thick. The subsurface layer is loamy sand that extends to a depth of 30 inches. It is pale brown in the upper part and very pale brown in the lower part. The subsoil is dominantly sandy clay loam that extends to 65 inches or more. The upper part is brownish yellow, the middle part is yellowish brown mottled with red and brownish yellow, and the lower part is mottled yellowish brown, red, and light gray. Below about 41 inches the subsoil is 5 to 15 percent plinthite. To a depth of about 40 inches the soil contains a few nodules of ironstone.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate in the upper part of the subsoil and slow in the lower part. The available water capacity is low. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few areas of Dothan, Lucy, and Troup soils.

This Fuquay soil is only moderately suited to farming because of low available water capacity and low fertility. Returning crop residue to the soil increases the available water capacity and decreases leaching of plant nutrients. During dry seasons, the soil responds to irrigation and produces high yields.

This soil is moderately suited to loblolly pine and slash pine. Equipment limitation and seedling mortality are management concerns.

This soil is well suited to most urban uses. Moderately slow permeability in the lower part of the subsoil somewhat limits the use of this soil for septic tank absorption fields. In most places increasing the size of the absorption area or modifying the design of the filter field can compensate for this limitation. The sandy surface layer is a limitation for most recreation uses.

The capability subclass is IIs. The woodland suitability subclass is 3s.

FuC—Fuquay-Urban land complex, 2 to 8 percent slopes. This complex consists of areas of Fuquay soils and Urban land so intermingled that they could not be mapped separately at the scale selected. It is in the uplands of the Southern Coastal Plain. It is very gently sloping on ridgetops and gently sloping on hillsides. Areas are 20 to 300 acres.

The Fuquay soils make up about 55 percent of each mapped area. Typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 23 inches. The subsoil is dominantly sandy clay loam that extends to a depth of 62 inches or more. It is brownish yellow in the upper part, yellowish brown in the middle part, and mottled yellowish brown, red, and brownish yellow in the lower part. Below 41 inches it is 5 to 15 percent plinthite.

The Fuquay soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 40 percent of each mapped area. Most areas are shopping centers, schools,

parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Ailey, Dothan, and Troup soils.

The Fuquay soil is well suited to most urban uses. Moderately slow permeability in the lower part of the subsoil somewhat limits the use of this soil for septic tank absorption fields. In most places, increasing the size of the absorption area or modifying the design of the filter field can compensate for this limitation. The sandy surface layer is a limitation for most recreation uses. Home vegetable gardens and the plants commonly used for landscaping grow well. Erosion is a hazard unless a permanent plant cover is established. Tillage across the slope and winter cover crops help to reduce erosion.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

GgB—Georgeville loam, 2 to 6 percent slopes. This deep, well drained, very gently sloping soil is on broad ridgetops in the uplands of the Southern Piedmont. Slopes are smooth and convex. Areas are 10 to 75 acres.

Typically, the surface layer is brown loam 7 inches thick. The subsoil extends to a depth of about 65 inches. The upper few inches is yellowish red silty clay loam, the middle part is red and yellowish red clay, and the lower part is mottled red and brown silty clay loam. The underlying layer is mottled red, gray, and yellow weathered slate and phyllite.

The soil is medium in natural fertility and low in organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included in mapping are small areas of soils that are similar to this Georgeville soil but have a clay loam surface layer and several small areas where the subsoil is dark red sandy clay. Also included are small areas of Grover and Wedowee soils.

This Georgeville soil is well suited to farming. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate hazard in cultivated areas. Minimum tillage and cover crops, including grasses and legumes, help reduce runoff and the hazard of erosion.

This soil is moderately suited to loblolly pine and yellow poplar. There are no significant limitations to woodland management.

This soil is well suited to most urban uses. Moderate permeability in the subsoil limits the use of this soil for septic tank absorption fields, but good design and proper installation commonly can compensate for this limitation.

The capability subclass is IIe. The woodland suitability subclass is 3o.

GgC—Georgeville loam, 6 to 10 percent slopes. This deep, well drained, gently sloping soil is on hillsides in the uplands of the Southern Piedmont. Slopes are smooth and convex. Areas are 5 to 50 acres.

Typically, the surface layer is brown loam 5 inches thick. The subsoil extends to a depth of about 52 inches. It is red throughout and is mottled with yellowish red, very pale brown, and brownish yellow in the lower part. The upper few inches of the subsoil is clay loam, the middle part is silty clay, and the lower part is silty clay loam. The underlying layer is weathered slate or phyllite.

This soil is medium in natural fertility and low in organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Grover and Wedowee soils.

This soil is moderately suited to farming. It is easy to keep in good tilth if crop residue is returned. If it is cultivated, however, runoff is rapid and the erosion hazard is severe. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and the hazard of erosion.

This soil is moderately suited to loblolly pine and Virginia pine. There are no significant limitations to woodland use or management.

This soil is moderately suited to most urban uses. Slope and moderate permeability are the main limitations. Good design and proper installation commonly can compensate for these limitations.

The capability subclass is IIIe. The woodland suitability subclass is 3o.

GhC—Georgeville-Urban land complex, 2 to 8 percent slopes. This complex consists of areas of Georgeville soils and Urban land so intermingled that they could not be mapped separately at the scale selected. It is very gently sloping and gently sloping on hillsides and ridgetops in the uplands of the Southern Piedmont. Areas are 25 to 300 acres.

The Georgeville soils make up about 60 percent of each mapped area. Typically, the surface layer is dark brown loam about 5 inches thick. The subsoil extends to a depth of about 52 inches. The upper few inches is yellowish red silty clay loam, the middle part is red silty clay, and the lower part is red silty clay loam and has strong brown mottles and light gray fragments of weathered rock. Below the subsoil is weathered rock that crushes to silty clay loam.

This soil is low in natural fertility and in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 35 percent of each mapped area. It is shopping centers, schools, parking

lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Grover and Wedowee soils.

The Georgeville soil is well suited to most urban uses. Moderate permeability limits the use of this soil for septic tank absorption fields. Good design and proper installation commonly can compensate for this limitation. The common plants used for landscaping and vegetable gardens grow well. The hazard of erosion is severe unless a permanent plant cover is established. Tillage across the slope and winter cover crops help to control erosion.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

GmA—Goldsboro sandy loam. This moderately well drained, nearly level soil is on broad low-lying uplands of the Southern Coastal Plain. The slope range is 0 to 2 percent. Areas are 20 to 60 acres.

Typically, the surface layer is very dark gray sandy loam about 8 inches thick. The subsurface layer is light yellowish brown loamy sand that extends to a depth of 11 inches. The subsoil to a depth of 56 inches is sandy clay loam. To a depth of 84 inches or more it is sandy clay. The upper part of the subsoil is brownish yellow, the middle part is yellowish brown mottled with yellowish red and brownish gray, and the lower part is mottled yellowish brown, light yellowish brown, yellowish red, red, and light gray.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Tilth is good, and the soil can be worked throughout a wide range of moisture content. The root zone is deep and is easily penetrated by the roots. A water table is at a depth of 2.5 to 3.5 feet in winter and early in spring.

Included with this soil in mapping are a few small areas of Dothan soils. Also included are small areas where the surface layer is about 20 to 30 inches thick.

This Goldsboro soil is well suited to farming. It is somewhat limited because of wetness, but ditches or buried drains commonly can compensate for this limitation. The soil is easy to keep in good tilth if crop residue is returned. Minimum tillage and cover crops, including grasses and legumes, increase the organic matter content.

This soil is well suited to slash pine and loblolly pine. Because of wetness, equipment limitation is a concern in winter and early in spring. Wood crops can be managed, however, during the drier seasons.

This soil is moderately suited to most urban uses. Wetness is the main limitation for sanitary facilities and community development. Commonly, artificial drainage can compensate for wetness.

The capability subclass is IIw. The woodland suitability subclass is 2w.

GnA—Goldsboro-Urban land complex. This complex consists of areas of Goldsboro soil and Urban land so intermingled that they could not be mapped separately at the scale selected. This nearly level complex is on broad low-lying uplands of the Southern Coastal Plain. The slope range is 0 to 2 percent. Areas are 7 to 45 acres.

Goldsboro sandy loam makes up about 55 percent of each mapped area. Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is brown loamy sand to a depth of 10 inches. The subsoil is dominantly sandy clay loam that extends to a depth of 65 inches or more. It is brownish yellow in the upper part, brownish yellow mottled with brownish gray and strong brown in the middle part, and mottled red, brown and gray in the lower part.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 40 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Dothan and Rains soils.

This unit is moderately suited to most urban uses. It is well suited to home vegetable gardens and the plants commonly used for landscaping. Wetness is a limitation. Artificial drainage commonly can compensate for wetness.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

GoE—Goldston slaty silt loam, 10 to 25 percent slopes. This shallow, well drained to excessively drained, sloping and moderately steep soil is on short hillsides in uplands of the Southern Piedmont. Slopes are irregular and convex. Areas are 5 to 40 acres.

Typically, the surface layer is dark grayish brown slaty silt loam about 3 inches thick. The subsoil is brown slaty silt loam that extends to a depth of 13 inches. Below the subsoil is brown weathered slate rock that if crushed is slaty silt loam.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderately rapid, and the available water capacity is low. Tilth is good. Slate fragments make up as much as 30 percent of the surface layer. Roots are restricted mainly to about the upper 1.5 to 2.5 feet of the soil.

Included with this soil in mapping are small areas of soils that are shallower over hard rock, that have more clay, or that have a smaller content of coarse fragments in the subsoil than is typical for Goldston soils. Small areas of Wedowee soils are also included. About 1 to 10 percent of each mapped area is rock outcrop.

This soil is poorly suited to farming because of shallowness over rock, low available water capacity, rockiness, and slope. It is moderately suited to pasture.

This soil is moderately suited to loblolly pine and Northern red oak. Contour management reduces the hazard of erosion. Special equipment is needed. Natural regeneration reduces the need for mechanical planting.

This soil is poorly suited to most urban uses. Shallowness over rock and steepness of slope limit most uses.

The capability subclass is VIs. The woodland suitability subclass is 4r.

Gr—Grady loam. This deep, poorly drained, nearly level soil is in saucer-shaped depressions in the Southern Coastal Plain. It commonly is saturated or ponded in winter and spring. The slope range is 0 to 2 percent. Areas range from 3 to 15 acres.

Typically, the surface layer is very dark gray loam about 4 inches thick. The subsoil is clay that extends to a depth of 62 inches or more. The upper few inches of the subsoil is gray, the middle part is dominantly light gray mottled with red and strong brown, and the lower part is mottled light gray and yellowish brown.

This soil is low in natural fertility and medium in organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. It has good tilth. Permeability is slow, and the available water capacity is medium. Ponding limits the growth of plants.

Included with this soil in mapping are small areas where the surface layer is sandy loam. Also included are soils that are similar to this Grady soil but are sandy clay loam in the lower part of the subsoil.

This soil is poorly suited to farming because of wetness and ponding. It is moderately suited to pasture.

This soil is well suited to slash pine, loblolly pine, water tupelo, and sweet gum. Wetness is the main limitation to equipment use. Logging can be successfully performed during the drier seasons. Artificial drainage is needed to reduce the high seedling mortality.

This soil is poorly suited to most urban uses. Wetness and ponding are limitations that are difficult to overcome.

The capability subclass is Vw. The woodland suitability subclass is 2w.

GvB—Grover sandy loam, 2 to 6 percent slopes. This deep, well drained, very gently sloping soil is on moderately broad ridgetops in the uplands of the Southern Piedmont. Slopes are smooth and convex. Areas are 5 to 50 acres or more.

Typically, the surface layer is grayish brown sandy loam 10 inches thick. The subsoil extends to a depth of 33 inches and has flakes of mica throughout. It is brownish yellow sandy clay loam in the upper few inches, yellowish brown clay loam in the middle part, and yellowish brown sandy clay loam mottled with yellow, red, and brown in the lower part. Below the subsoil is several inches of mottled brown, red, and yellow sandy loam over material weathered from mica schist.

This soil is low in natural fertility and organic matter content. It is medium acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Georgeville and Wedowee soils. Also included are areas of soils that have a clayey subsoil.

This soil is well suited to farming. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate hazard if cultivated crops are grown and the soil is not protected. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and control erosion.

This soil is moderately suited to Loblolly pine, slash pine, sycamore, and yellow poplar. There are no significant limitations to woodland use or management.

This soil is moderately suited to urban uses. Moderate permeability somewhat limits the use of the soil for septic tank absorption fields, and depth to rock limits the use for trench type sanitary land fills.

The capability subclass is IIe. The woodland suitability subclass is 3o.

GvC—Grover sandy loam, 6 to 10 percent slopes. This deep, well drained, gently sloping soil is on moderately long hillsides in the uplands of the Southern Piedmont. Slopes are smooth and convex. Areas are 5 to 25 acres.

Typically, the surface layer is dark grayish brown sandy loam 7 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 12 inches. The subsoil extends to 40 inches. It is dominantly yellowish brown sandy clay loam and is mottled with yellowish red and red in the lower part. The underlying weathered mica schist extends to 55 inches or more.

This soil is low in natural fertility and organic matter content. It is medium acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Georgeville and Wedowee soils. Also included are areas of soils that have more clay in the subsoil than is typical for Grover soils.

This Grover soil is well suited to farming. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate to severe hazard in cultivated areas. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and erosion.

This soil is well suited to loblolly pine, slash pine, sycamore, and yellow poplar. There are no significant limitations to woodland use and management.

This soil is moderately suited to urban uses. Slope and moderate permeability limit the use of the soil for septic tank absorption fields. The depth to rock limits its use for trench type sanitary landfills.

The capability subclass is IIIe. The woodland suitability subclass is 3o.

HZ—Hydraquents, mucky. These very poorly drained, nearly level soils are in low areas at the base of foothills and in depressions on flood plains along the Savannah River and some of its tributaries. Areas are irregular in shape and range from about 40 acres to 200 acres. Hydraquents are flooded for very long periods throughout the year. They are ponded to a depth of 1 foot to 6 feet in most areas.

Typically, Hydraquents have a few inches of dark grayish brown muck over strata of grayish brown silt loam and greenish gray silty clay loam that extend to a depth of 50 inches or more. The material contains abundant roots.

Included with Hydraquents, mucky, in mapping are small areas of Chastain soils.

Hydraquents are mainly wooded with water tupelo, sweetbay, and a few swamp maple and green ash. They also support many water-tolerant shrubs and aquatic plants.

These soils are poorly suited to most uses because of flooding, wetness, and low strength. These limitations can be overcome only by extensive flood control and artificial drainage.

These soils are well suited to wetland plants and to shallow water areas for wetland wildlife, mainly ducks, alligators, and crayfish.

The capability subclass is VIIIw. Woodland suitability subclass not assigned.

LkB—Lakeland sand, 2 to 5 percent slopes. This deep, excessively drained, very gently sloping soil is on ridgetops and hillsides in the uplands of the Sand Hills. Slopes are smooth and convex in most places. Areas are 40 to 300 acres.

Typically, the surface layer is grayish brown sand about 4 inches thick. The lower part is mottled with light yellowish brown. The underlying material to a depth of 85 inches or more is brownish yellow sand.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is very rapid, and the available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Ailey, Fuquay, and Troup soils. Also included are small areas of very clean sands that are nearly free of silt and clay.

This soil is poorly suited to farming because of low fertility and low available water capacity. Returning crop residue increases fertility and available water capacity. Irrigating increases the yields of the crops commonly grown.

This soil is moderately suited to the commonly grown pines. Equipment limitation and seedling mortality are management concerns.

This soil is moderately suited to most urban uses. It is too sandy for most recreation uses. Seepage is a limitation for most sanitary facilities.

The capability subclass is IVs. The woodland suitability subclass is 4s.

LkC—Lakeland sand, 5 to 10 percent slopes. This deep, excessively drained, gently sloping soil is on ridgetops and hillsides in the uplands of the Sand Hills. Slopes are smooth and convex. Areas are 30 to 200 acres.

Typically, the surface layer is dark gray sand about 4 inches thick. The underlying material to a depth of 85 inches or more is sand. The upper few inches is brownish yellow, and the rest is yellow.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is very rapid, and the available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Ailey and Troup soils. Also included are small areas of very clean sands that are nearly free of silt and clay.

This soil is poorly suited to farming because of slope, low fertility, and low available water capacity.

This soil is moderately suited to the commonly grown pines. Equipment limitation and seedling mortality are management concerns.

This soil is moderately suited to most urban uses. It is too sandy for most recreation use. Seepage is a limitation for most sanitary facilities.

The capability subclass is VIs. The woodland suitability subclass is 4s.

LkD—Lakeland sand, 10 to 17 percent slopes. This deep, excessively drained, sloping and moderately steep soil is on hillsides in the uplands of the Sand Hills. Slopes are short, irregular, and convex. Areas are 20 to 60 acres.

Typically, the surface layer is dark grayish brown sand about 3 inches thick. The underlying material to a depth of 80 inches is sand. The upper part is yellowish brown, the middle part is brownish yellow, and the lower part is yellow.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is very rapid, and the available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Ailey, Troup, and Vaucluse soils. Also included are small areas of very clean sand that is nearly free of silt and clay.

This soil is moderately suited to the commonly grown pines. Equipment limitation and seedling mortality are management concerns.

This soil is poorly suited to farming and to most urban uses. Slope is a limitation for farming, septic tank absorption fields, sewage lagoons, dwellings, small commercial buildings, and playgrounds. The soil is too sandy for many recreation uses. Seepage is a limitation for most sanitary facilities.

The capability subclass is VIIs. The woodland suitability subclass is 4s.

LmB—Lucy loamy sand, 1 to 5 percent slopes. This deep, well drained, nearly level and very gently sloping soil is on broad ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes are smooth and convex. Areas are 10 to 75 acres.

Typically, the surface layer is dark brown loamy sand about 8 inches thick. The subsurface layer is loamy sand about 28 inches thick. It is strong brown in the upper part and yellowish red in the lower part. The subsoil is red and extends to 65 inches or more. It is sandy loam in the upper few inches and sandy clay loam in the lower part.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is low. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few small areas where the surface layer is dark reddish brown and the subsoil is dark red. Also included are a few intermingled areas of Lakeland, Orangeburg, and Troup soils.

This soil is only moderately suited to farming because the available water capacity is low. Returning crop residue to the soil increases available water capacity. During dry seasons, the soil responds to irrigation and produces high yields.

This soil is moderately suited to longleaf pine and slash pine. Equipment limitation and seedling mortality are management concerns.

This soil is well suited to most urban uses. Seepage is a limitation for sewage lagoons. The sandy surface layer is a limitation for recreation use.

The capability subclass is IIs. The woodland suitability subclass is 3s.

LmC—Lucy loamy sand, 5 to 8 percent slopes. This deep, well drained, gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes commonly are smooth and convex. Areas are 10 to 50 acres.

Typically, the surface layer is brown loamy sand about 11 inches thick. The subsurface layer is strong brown loamy sand 18 inches thick. The subsoil is dominantly sandy clay loam that extends to a depth of 80 inches or more. It is yellowish red in the upper few inches and red in the lower part.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is low. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are areas where the surface layer is dark reddish brown and the subsoil is dark red. Also included are a few intermingled areas of Lakeland, Orangeburg, and Troup soils.

This soil is only moderately suited to farming because of slope and low available water capacity. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and erosion. Returning crop residue to the soil increases the available water capacity and decreases the leaching of plant nutrients.

This soil is moderately suited to longleaf and slash pine. Equipment limitation and seedling mortality are management concerns.

This soil is well suited to most urban uses. Seepage is a limitation for sewage lagoons. Slope is a limitation for small commercial buildings. The sandy surface layer limits the use of the soil for recreation.

The capability subclass is IIIs. The woodland suitability subclass is 3s.

LmD—Lucy loamy sand, 8 to 15 percent slopes. This deep, well drained, sloping soil is on hillsides in the uplands of the Southern Coastal Plain. Slopes are complex and convex. Areas are 10 to 50 acres.

Typically, the surface layer is dark grayish brown loamy sand about 9 inches thick. The subsurface layer is brown loamy sand that extends to a depth of 26 inches. The subsoil extends to 62 inches or more. The upper few inches is yellowish red sandy loam, and the rest is red sandy clay loam mottled with strong brown.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are areas of a soil that is similar but has a dark reddish brown surface layer and a dark red subsoil.

This soil is poorly suited to farming. It is moderately suited to pasture. Slope and low available water capacity are the main limitations. Returning crop residue to the soil increases the available water capacity and decreases the leaching of plant nutrients.

This soil is moderately suited to longleaf pine and slash pine. Equipment limitation and seedling mortality are management concerns.

This soil is moderately suited to most urban uses. Slope is the main limitation. Seepage is a limitation for most sanitary facilities. The soil is too sandy for recreation uses. The limitations commonly can be overcome by good design and proper installation or by modifying the slope.

The capability subclass is IVs. The woodland suitability subclass is 3s.

MkB—Mecklenburg loam, 2 to 6 percent slopes. This moderately deep, well drained, very gently sloping soil is on ridgetops in the uplands of the Southern Piedmont. Slopes are smooth and convex. Areas are 5 to 50 acres or more.

Typically, the surface layer is dark brown loam 7 inches thick. The subsoil extends to a depth of 31 inches. The upper few inches is reddish brown loam, the middle part is yellowish red and red silty clay, and the lower part is mottled strong brown, yellowish brown, and yellow silty clay loam. The substratum is material weathered from basic schist rocks.

This soil is low in natural fertility and organic matter content. It is medium acid or slightly acid throughout. Permeability is slow, and the available water capacity is medium. Tilth is good. The root zone commonly is deep.

Included with this soil in mapping are small areas of a soil that is similar but has a clay loam surface layer and a few small areas of eroded soils. Also included are small areas of Wedowee soils.

This soil is only moderately suited to farming. Slow permeability is a limitation if the growing season is excessively wet. Good tilth can be maintained by returning crop residue. Erosion is a moderate hazard if this soil is cultivated. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and erosion.

This soil is moderately suited to loblolly pine, shortleaf pine, and eastern redcedar. There are no significant limitations to woodland use or management.

This soil is poorly suited to most urban uses. Shrink-swell potential and slow permeability are limitations. Good design and construction can commonly compensate for these limitations. This soil is well suited to most recreation uses.

The capability subclass is IIe. The woodland suitability subclass is 4o.

OeA—Orangeburg loamy sand, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on broad ridgetops in the uplands of the Southern Coastal Plain. Areas are 15 to 60 acres.

Typically, the surface layer is dark brown loamy sand about 10 inches thick. The subsoil is sandy clay loam that extends to a depth of 60 inches or more. The upper few inches is yellowish red, and the rest is red.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few areas of Dothan and Faceville soils.

This Orangeburg soil is well suited to farming. During dry seasons, it responds to irrigation and produces high yields. It is easy to keep in good tilth if crop residue is returned. Minimum tillage and cover crops, including grasses and legumes, help to conserve moisture and maintain organic matter content.

This soil is well suited to loblolly pine and slash pine. There are no significant limitations to woodland use and management.

This soil is well suited to most urban uses.

The capability class is I. The woodland suitability subclass is 2o.

OeB—Orangeburg loamy sand, 2 to 5 percent slopes. This deep, well drained, very gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes are smooth and convex. Areas are 10 to 100 acres.

Typically, the surface layer is brown loamy sand about 10 inches thick. The subsoil is sandy loam that extends to a depth of 64 inches or more. The upper part is yellowish red. The lower part is red and is mottled with reddish yellow and strong brown.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are a few areas of Dothan and Faceville soils. Also included are a few areas where the surface layer is sandy clay loam and is eroded.

This Orangeburg soil is well suited to farming (fig. 2). During dry seasons, it responds well to irrigation and produces high yields. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate hazard if the soil is cultivated. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and erosion.

This soil is well suited to loblolly pine and slash pine. There are no significant limitations to woodland use and management.

This soil is well suited to most urban uses.

The capability subclass is IIe; the woodland suitability subclass is 2o.

Figure 2.—The soybeans in the foreground are on Orangeburg loamy sand, 2 to 5 percent slopes. This soil is prime farmland. The somewhat droughty Fuquay loamy sand, 1 to 5 percent slopes, is in the background.

OeD—Orangeburg loamy sand, 8 to 15 percent slopes. This deep, well drained, sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes are irregular and choppy. Areas are 5 to 30 acres.

Typically, the surface layer is loamy sand about 12 inches thick. The upper part is brown and the lower part is yellowish brown. The subsoil is red sandy clay loam that extends to a depth of 69 inches or more.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Lucy and Vaucluse soils. Also included are a few small areas of soils that have a sandy clay loam surface layer, are eroded, and are dissected by a few shallow or deep gullies in places.

This soil is moderately suited to farming because of the irregular slope and the erosion hazard. It is well suited to hay and pasture (fig. 3).

This soil is well suited to loblolly pine and slash pine. There are no significant limitations to woodland use and managment.

This soil is moderately suited to most urban uses. Slope is the main limitation. In most areas good design and construction can compensate for this limitation.

The capability subclass is IVe. The woodland suitability subclass is 2o.

OsC—Orangeburg sandy loam, 5 to 8 percent slopes. This deep, well drained, gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Coastal Plain. Slopes commonly are smooth and convex. Areas are 5 to 40 acres.

Typically, the surface layer is dark yellowish brown sandy loam about 5 inches thick. The subsoil is red sandy clay loam that extends to a depth of 60 inches or more.

This soil is medium in natural fertility and low in organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. The root zone is deep and is easily penetrated by the roots.

Figure 3.—Sericea lespedeza on Orangeburg loamy sand, 8 to 15 percent slopes. This soil is well suited to hay and pasture.

Included with this soil in mapping are a few areas of Dothan and Faceville soils. Also included are a few small areas where the surface layer is sandy clay loam and is eroded.

This Orangeburg soil is only moderately suited to farming because of slope. It is well suited to hay and pasture. It is easy to keep in good tilth if crop residue is returned. If cultivated crops are grown, the hazard of erosion is severe. Terracing, minimum tillage, and cover crops, including grasses and legumes, reduce runoff and erosion.

This soil is well suited to loblolly pine and slash pine. There are no significant limitations to woodland use and management.

This soil is well suited to most urban uses. Slope, however, is a limitation for sewage lagoon areas, small commercial buildings, and playgrounds.

The capability subclass is IIIe. The woodland suitability subclass is 2o.

Pm—Pits, mines. This map unit consists of kaolin pits and a granite quarry. Most of the pits are not large, but one kaolin pit near Hephzibah is about 400 acres. The one large granite quarry, about 150 acres, is in the northeastern part of Richmond County near the Columbia County line.

The kaolin pits are 200 to 500 feet or more wide and 200 to 500 feet deep. Around the pits are piles of overburden material and settling basins. Vegetation is sparse.

The quarry is several hundred feet wide and 50 to 200 feet deep. It exposes granite bedrock, saprolite, and clay material. Crushed rock and overburden material have been stockpiled within the mapped areas.

Ra—Rains loamy sand. This deep, poorly drained, nearly level soil is on flats and in slight depressions on stream terraces of the Southern Coastal Plain. The slope range is 0 to 2 percent. Areas are 5 to 60 acres.

Typically, the surface layer is very dark gray loamy sand 16 inches thick. The subsoil extends to a depth of 65 inches or more. It is gray sandy clay loam mottled with brownish yellow in the upper part and light gray sandy clay loam mottled with brownish yellow, red, and strong brown in the lower part.

This soil is low in natural fertility and organic matter content. It is very strongly acid or strongly acid

throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. Although the root zone is deep, the growth of plants is limited because the soil commonly is saturated from fall to early in spring.

Included with this soil in mapping are a few small areas of Bibb, Goldsboro, and Osier soils. Also included are areas where the surface layer is 20 inches or more thick.

Most of this soil is wooded. It is poorly suited to farming because of wetness and flooding.

This soil is well suited to slash pine, loblolly pine, and sweetgum. Wetness and flooding are limitations to equipment use. Wood crops can be managed and harvested during the drier seasons. Artificial drainage is needed to reduce seedling mortality.

This soil is poorly suited to most urban uses. Wetness, which is the main limitation, is difficult to overcome.

The capability subclass is IVw. The woodland suitability subclass is 2w.

Rh—Rains-Urban land complex. This complex consists of areas of Rains soil and Urban land so intermingled that they could not be mapped separately at the scale selected. It is in the upper parts of drainageways and in depressions in the Southern Coastal Plain. The slope range is 0 to 2 percent. Areas are 6 to 70 acres.

Rains loamy sand makes up about 55 percent of each mapped area. Typically, the surface layer is dark gray loamy sand about 8 inches thick. The subsurface layer is gray loamy sand and extends to a depth of 16 inches. The subsoil is light gray sandy clay loam and extends to a depth of 60 inches or more. The lower part is mottled with light yellowish brown mottles.

The soil is low in natural fertility and organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium.

Urban land makes up about 35 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Goldsboro, Bibb, and Osier soils.

The Rains soil is poorly suited to urban uses because of wetness. If outlets are available, wetness commonly can be reduced by artificial drainage. Home vegetable gardens and the plants commonly used for landscaping grow well if the soil is adequately drained.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

Ro—Riverview silt loam. This deep, well drained, nearly level soil is on flood plains near creeks and rivers. Frequent brief periods of flooding occur in winter and early in spring in most areas. The slope range is 0 to 2 percent. Areas are 5 to 200 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of about 33 inches. It is reddish brown loam over several inches of dark brown silt loam. The underlying material to a depth of about 65 inches is dominantly dark brown loamy fine sand. Flakes of mica are throughout the soil.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are areas where the soil is sandy throughout. Also included are areas of soils that are similar to this Riverview soil but have a surface layer and subsoil more than 40 inches thick. Wet areas are indicated by spot symbols on the map.

This soil is well suited to farming. Flooding is not a concern during the growing season. The soil is easy to keep in good tilth if crop residue is returned.

This soil is well suited to loblolly pine and yellow poplar. There are no significant limitations to woodland use and management.

This soil is poorly suited to most urban uses because of flooding. Only extensive flood control can compensate for this limitation. In some areas protected by a levee, the soil is better suited to urban uses (fig. 4).

The capability subclass is IIw. The woodland suitability subclass is 1o.

Rp—Riverview-Urban land complex. This complex consists of areas of Riverview soil and Urban land so intermingled that they could not be mapped separately at the scale selected. It is on flood plains of the Savannah River. The levee near the Savannah River protects the soil from flooding. The slope range is 0 to 2 percent. Areas are 50 to 250 acres.

Riverview silt loam makes up about 60 percent of each mapped area. Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of 33 inches. It is reddish brown loam over several inches of dark brown silt loam. The underlying material to a depth of about 65 inches is dominantly dark brown loamy fine sand. Flakes of mica are throughout the soil.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 35 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Figure 4.—This levee on Riverview silt loam helps to protect downtown Augusta and many industrial areas from flooding.

Included with this complex in mapping are small areas of Chewacla soils.

The Riverview soil is moderately suited to most urban uses. It is well suited to home vegetable gardens and the plants commonly used for landscaping. Although this soil is protected from flooding, wetness limits its use for most sanitary facilities. Artificial drainage is needed.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

Rr—Roanoke loam. This deep, poorly drained, nearly level soil is on stream terraces slightly downstream from the uplands of the Southern Piedmont. It is flooded for brief periods in winter and spring. The slope range is 0 to 2 percent. Slopes are slightly concave. Areas are 25 to 200 acres.

Typically, the surface layer is dark gray loam 5 inches thick. The subsoil extends to a depth of 70 inches. The upper few inches is dark gray clay loam, the middle part is gray clay mottled with brown and red, and the lower part is mottled gray, brown, and red sandy clay loam. The underlying material is mottled gray, brown, and red sandy loam to 96 inches or more.

This soil is medium in natural fertility and organic matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and the available water capacity is medium. Tilth is poor. Although the root zone is deep, roots are limited by a water table at a depth of less than 1 foot in winter and spring.

Included with this soil in mapping are areas where the subsoil is dominantly sandy clay loam.

In most places this soil is wooded. In a few small areas it is used as pasture. The soil is poorly suited to farming because of wetness and flooding. It is moderately suited to hay and pasture.

This soil is well suited to loblolly pine, sycamore, and sweetgum. Wetness and flooding are the main limitations to equipment use. Wood crops can be managed and harvested, however, during the drier seasons. Artificial drainage is needed to reduce high seedling mortality.

This soil is poorly suited to urban uses. Wetness and flooding are limitations that are difficult to overcome.

The capability subclass is Vw. The woodland suitability subclass is 2w.

TwB—Troup fine sand, 1 to 5 percent slopes. This deep, well drained, dominantly very gently sloping soil is on broad ridgetops in the uplands of the Southern Coastal Plain. Slopes commonly are smooth, undulating, and convex. Areas are 30 to 500 acres or more.

Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of 54 inches. It is light yellowish brown in the upper part and yellowish brown in the lower part. The subsoil extends to 80 inches or more. The upper few inches is strong brown sandy loam, and the rest is red sandy clay loam that has a few yellowish brown mottles.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout the surface layer in limed areas. Permeability is moderate in the subsoil and rapid in the thick sandy surface layer. The available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are areas of a soil that is similar but has a seasonal water table at a depth of 40 to 60 inches. Also included are small areas of Fuquay, Lakeland, and Lucy soils.

This soil is only moderately suited to farming because the available water capacity is low. Returning crop residue to the soil can partly compensate for this limitation. Irrigating can increase the yields of the crops commonly grown.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Equipment limitation and seedling mortality are concerns.

This soil is well suited to most urban uses. The hazard of seepage is a limitation for most sanitary facilities. The soil is too sandy for most recreation uses.

The capability subclass is IIIs. The woodland suitability subclass is 3s.

TwC—Troup fine sand, 5 to 10 percent slopes. This deep, well drained, gently sloping soil is on narrow ridgetops and long broad hillsides in the uplands of the Southern Coastal Plain. Slopes are commonly smooth, undulating, and convex. Areas are 10 to 200 acres or more.

Typically, the surface layer is brown fine sand about 7 inches thick. The subsurface layer is fine sand to a depth of 48 inches. It is light yellowish brown in the upper part, strong brown in the middle part, and yellowish red in the lower part. The subsoil extends to 90 inches or more. The upper part is red sandy loam, and the lower part is red sandy clay loam.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the subsoil and rapid in the thick sandy surface layer. The available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are areas of a soil that is similar but has a seasonal water table at a depth of 40 to 60 inches. Also included are small areas of Fuquay, Lakeland, and Lucy soils.

This soil is poorly suited to farming because of low available water capacity and slope.

This soil is moderately suited to loblolly pine, longleaf pine, and slash pine. Equipment limitation and seedling mortality are concerns.

This soil is well suited to most urban uses. The hazard of seepage is a limitation for most sanitary facilities. The soil is too sandy for most recreation uses.

The capability subclass is IVs. The woodland suitability subclass is 3s.

TwD—Troup fine sand, 10 to 17 percent slopes. This deep, well drained, sloping and moderately steep soil is on hillsides in the uplands of the Southern Coastal Plain. Slopes are complex and convex. Areas are 10 to 75 acres.

Typically, the surface layer is brown fine sand about 9 inches thick. The subsurface layer, to a depth of 50 inches, is fine sand. It is light yellowish brown in the upper part and brownish yellow in the lower part. The subsoil extends to 65 inches or more. The upper few inches is yellowish brown sandy loam, and the rest is brownish yellow sandy clay loam mottled with brown and red.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the subsoil and rapid in the thick sandy surface layer. The available water capacity is low. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Lakeland and Lucy soils.

This soil is poorly suited to farming because of slope and low available water capacity.

This map unit is mainly in mixed oak and longleaf pine. It is moderately suited to loblolly pine, longleaf pine, and slash pine. Equipment limitation and seedling mortality are concerns.

This soil is poorly suited to most urban uses. Slope is a limitation to these uses. Seepage is a limitation to most sanitary facilities. The soil is too sandy for many recreational uses.

The capability subclass is VIs. The woodland suitability subclass is 3s.

TxC—Troup-Urban land complex, 1 to 8 percent slopes. This complex consists of areas of Troup soils and Urban land so intermingled that they could not be mapped separately at the scale selected. This complex is in the uplands of the Southern Coastal Plain. It is nearly level and very gently sloping on ridgetops and very gently sloping on hillsides. Areas are 20 to 300 acres.

Troup soils make up about 55 percent of this map unit. Typically, the surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer extends to a depth of 66 inches. It is light yellowish brown fine sand over very pale brown sand. The subsoil is dominantly sandy clay loam to a depth of 86 inches or more. The upper few inches is brownish yellow, and the lower part is mottled brownish gray, light yellowish brown, and yellowish brown.

This soil is low in natural fertility and content of organic matter. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. It has good tilth and can be worked throughout a wide range of moisture content. Permeability is rapid in the thick sandy surface layer and moderate in the subsoil. The available water capacity is low. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 40 percent of this unit. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Lakeland soil.

This complex is well suited to most urban uses. Seepage, however, is a limitation for most sanitary facilities. Sealing with clay or asphalt commonly prevents seepage. The sandy surface layer limits most recreation uses. Low available water capacity is a limitation for landscaping and vegetable gardens. Adding large amounts of organic matter increases the available water capacity. During dry periods, frequent watering promotes good growth.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

UaA—Udorthents, 0 to 2 percent slopes. These soils are mainly on stream terraces and flood plains near the Savannah River and near creeks. Soils on stream terraces are occasionally flooded. Soils on flood plains are frequently flooded for brief periods. Areas are irregular in shape and range from 20 to 50 acres.

Typically, Udorthents are fill material that is 3 to 10 feet or more thick over the natural soil. The material ranges from sand to clay and includes fragments of bricks and concrete blocks, rocks, pieces of lumber, and other refuse. The water table is within about 1.5 to 2.5 feet of the surface in winter and early in spring.

This map unit is mainly open and idle, but in places it is covered with weeds and bushes. Buildings are on a few areas.

The soils are poorly suited to most uses because of flooding, wetness, and low strength. These limitations could be somewhat reduced by flood control and drainage.

No capability subclass or woodland suitability subclass is assigned.

Uc—Udorthents, sandy and loamy. These soils are mainly sandy and loamy soil material, remnants of the substratum or the parent material of original soils. They are mainly in borrow areas in the uplands of the Sand Hills. The borrow areas were formed by extensive cutting, filling, and reshaping of the original soils. In many places the soil mantle has been excavated to a depth of 5 to 20 feet. In a few places the borrow areas are being mined. The slope range is 2 to 17 percent. Areas are about 3 to 40 acres.

Most areas are abandoned and are revegetated. Some have been shaped, sodded, and planted to trees.

The soils in this map unit are poorly suited to most uses. In many areas they could be planted to hardwood trees or pine trees or developed for wildlife habitat.

Udorthents, sandy and loamy, are not assigned to a capability subclass or woodland suitability subclass.

Ud—Urban land. This map unit is mainly in the metropolitan area of Augusta. Most areas are on the alluvial plain along the Savannah River, where a levee protects them from flooding. A few areas are on ridgetops in the uplands of the Southern Coastal Plain and the Southern Piedmont. Areas on the ridgetops are gently sloping and those on the alluvial plain are nearly level.

Commonly, the soil has been modified by cutting, filling, shaping, and smoothing. In places where cuts are deep, weathered bedrock or clayey and sandy sediment has been exposed.

Urban land makes up more than 85 percent of the mapped areas. It is dominantly business districts, shopping centers, schools, churches, parking lots, motels, industrial sites, streets and sidewalks, and housing developments. Some areas are wooded. Some are seeded to grass.

Included in mapping are small areas of Riverview soils on the flood plains and Troup soils on the ridgetops.

In construction areas on ridgetops erosion is a severe hazard (fig. 5). On the alluvial plain, local flooding and sedimentation are hazards.

VaC—Vaucluse-Ailey complex, 5 to 8 percent slopes. This complex consists of small areas of well drained Vaucluse and Ailey soils so intermingled that they could not be mapped separately at the scale selected. These gently sloping soils are on narrow ridgetops and hillsides in the uplands of the Sand Hills and the Southern Coastal Plain. Slopes are smooth and convex. Areas are 10 to 50 acres.

The Vaucluse soils make up about 65 percent of each mapped area. Typically, the surface layer is dark brown

Figure 5.—The grass on this slope in an area of Urban land controls erosion and prevents sediment from entering the nearby stream.

loamy sand about 8 inches thick. The subsoil is sandy clay loam that extends to a depth of 60 inches or more. Below about 20 inches the subsoil is firm and brittle when moist and very hard when dry. The upper part of the subsoil is strong brown mottled with red, the middle part is yellowish red mottled with red and brown, and the lower part is yellowish red mottled with yellowish brown and pale brown.

The Vaucluse soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout unless the surface layer has been limed. Permeability is slow, and the available water capacity is medium. Tilth is good. Although the soil is deep, roots are restricted mainly to the surface layer and upper part of the subsoil.

The Ailey soils make up about 25 percent of each mapped area. Typically, the surface layer is brown loamy sand about 6 inches thick. The subsurface layer is yellowish brown loamy sand that extends to a depth of 25 inches. The subsoil is sandy clay loam that extends to 65 inches or more. Below a depth of about 29 inches the subsoil is firm and brittle when moist and very hard when dry. The upper part is strong brown, and the lower part is yellowish red mottled with yellowish brown, red, and strong brown.

The Ailey soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the sandy surface layer and slow in the brittle part of the subsoil. The available water capacity is low. Tilth is good. Roots are restricted mainly to the surface layer and upper part of the subsoil.

Included in mapping are small areas of Orangeburg soils. Also included are small areas of soils that have more clay in the subsoil than is typical for the Vaucluse soils. In these areas the kaolin content is high. In other small included areas the surface layer and subsoil are thinner and the subsoil does not have a brittle layer.

The soils in this complex are poorly suited to farming. They are limited because of the firm, brittle layer in the

subsoil. The hazard of erosion is moderate if cultivated crops are grown. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and erosion.

These soils are only moderately suited to loblolly pine and slash pine. There are no significant limitations to woodland use and management. Equipment limitation and seedling mortality are management concerns, however, on the sandier parts of this complex.

These soils are well suited to most urban uses. Slow permeability in the subsoil is a limitation for septic tank absorption fields. In many places, the surface layer is too sandy for most recreation uses.

The capability subclass is IVe. The woodland suitability subclass is 3o for Vaucluse soils and 4s for Ailey soils.

VaD—Vaucluse-Ailey complex, 8 to 17 percent slopes. This complex consists of areas of well drained Vaucluse and Ailey soils so intermingled that they could not be mapped separately at the scale selected. These sloping and moderately steep soils are on hillsides in the uplands of the Sand Hills and the Southern Coastal Plain. Slopes are irregular and convex. Areas are 10 to 60 acres.

The Vaucluse soils make up about 60 percent of each mapped area. Typically, the surface layer is grayish brown loamy sand about 6 inches thick. The subsurface layer is brownish yellow loamy sand that extends to a depth of 11 inches. The subsoil is dominantly coarse sandy clay loam that extends to a depth of 70 inches or more. Below a depth of about 24 inches the subsoil is firm and brittle when moist and very hard when dry. The upper part of the subsoil is mainly yellowish brown mottled with red, brown, and gray, the middle part is yellowish red mottled with brown, gray, and red, and the lower part is reddish yellow mottled with gray and yellow.

The Vaucluse soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout. They have good tilth. Permeability is slow, and the available water capacity is medium. Roots are restricted mainly to the surface layer and the upper part of the subsoil.

The Ailey soils make up about 25 percent of each mapped area. Typically, the surface layer is grayish brown loamy sand about 5 inches thick. The subsurface layer is brownish yellow loamy sand that extends to a depth of 23 inches. The subsoil is dominantly sandy clay loam that extends to 66 inches or more. Below about 28 inches it is firm and brittle when moist and very hard when dry. It is yellowish brown in the upper part, strong brown mottled with yellowish brown, yellowish red, and brownish gray in the middle part, and reddish yellow mottled with red, strong brown, and brownish gray in the lower part.

The Ailey soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the sandy surface layer and slow in the brittle part of the subsoil. The available water capacity is low. Tilth is good. Roots are restricted mainly to the surface layer and the upper part of the subsoil.

Included in mapping are small areas of Orangeburg soils. Also included are small areas where the subsoil contains more clay than is typical for the Vaucluse soils. In these areas the kaolin content is high. In other small included areas the surface layer and subsoil are thinner than those of the Vaucluse soil and the subsoil does not have a brittle layer.

These soils are moderately suited to loblolly pine and slash pine. There are no significant limitations in woodland use and management. Equipment limitation and seedling mortality are concerns, however, on the sandier parts of the complex.

These soils are poorly suited to farming. They are moderately suited to most urban uses. Slope is a limitation for farming, sanitary facilities, community development, and playgrounds. Slow permeability in the subsoil is a limitation for septic tank absorption fields. Good design and construction or modification of slope can compensate for these limitations to some degree. In most places, the sandy surface layer is a limitation for most recreation uses.

The capability subclass is VIe. The woodland suitability subclass is 3o for Vaucluse soils and 4s for Ailey soils.

VuC—Vaucluse-Urban land complex, 5 to 8 percent slopes. This complex consists of areas of Vaucluse soils and Urban land so intermingled that they could not be mapped separately at the scale selected. The soils in this complex are well drained and very gently sloping or gently sloping. They are on ridgetops and hillsides in the uplands of the Sand Hills. Areas are 20 to 400 acres.

Vaucluse soils make up about 65 percent of each mapped area. Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 9 inches. The subsoil is sandy clay loam that extends to 60 inches or more. Below a depth of about 19 inches it is firm and brittle when moist and very hard when dry. The upper part of the subsoil is brownish yellow, the middle part is yellowish red mottled with brownish yellow and light brownish gray, and the lower part is mottled light gray, brownish yellow, and yellowish red.

The Vaucluse soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and the available water capacity is medium. Tilth is good. Roots are restricted mainly to the surface layer and the upper part of the subsoil.

Urban land makes up about 30 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Ailey and Orangeburg soils. Also included are small areas where the subsoil is sandy clay or silty clay and is firm and brittle.

The Vaucluse soils are well suited to most urban uses. Slow permeability limits the use of the soils as septic tank absorption fields. The sandy surface layer is a limitation to many recreation uses. The plants commonly used for landscaping and vegetable gardens grow well. Erosion is a hazard unless a permanent plant cover is established. Tillage across the slope and winter cover crops help to control erosion in vegetable gardens.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

VuD—Vaucluse-Urban land complex, 8 to 17 percent slopes. This complex consists of areas of Vaucluse soil and Urban land so intermingled that they could not be mapped separately at the scale selected. The soils in this unit are well drained and sloping and moderately steep. They are on hillsides in the uplands of the Sand Hills. Areas are 10 to 80 acres.

Vaucluse loamy sand makes up 60 percent of each mapped area. Typically, the surface layer is grayish brown loamy sand about 4 inches thick. The subsurface layer is pale brown loamy sand about 4 inches thick. The subsoil extends to a depth of 60 inches or more. Below a depth of about 20 inches it is firm and brittle when moist and very hard when dry. The upper part of the subsoil is reddish yellow sandy clay loam, the middle part is reddish yellow sandy clay loam mottled with brownish yellow and light brownish gray, and the lower part is mottled reddish yellow, light brownish gray, brownish yellow, and dark red coarse sandy loam.

The Vaucluse soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Tilth is good. Roots are restricted to the surface layer and the upper part of the subsoil.

Urban land makes up about 35 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Ailey and Orangeburg soils. Also included are small areas where the subsoil is sandy clay or silty clay that is firm and brittle.

The Vaucluse soil is only moderately suited to most nonfarm uses because of slope. The slowly permeable firm and brittle layer in the subsoil is a limitation for septic tank absorption fields. In places, good design and proper construction or modification of the slope can partly compensate for these limitations. The sandy surface layer is a limitation for most recreation uses. The hazard of erosion is severe unless a permanent plant cover is established. Tillage across the slope and winter cover crops help to control erosion in vegetable gardens.

This complex is not assigned to a capability subclass or to a woodland suitability subclass.

WeC—Wedowee fine sandy loam, 6 to 10 percent slopes. This deep, well drained, gently sloping soil is on ridgetops and hillsides in the uplands of the Southern Piedmont. Slopes are smooth and convex. Areas are 5 to 90 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam 5 inches thick. The subsurface layer is light yellowish brown sandy loam 4 inches thick. The subsoil extends to a depth of 33 inches. It is mainly yellowish red. The upper part is mottled with brownish yellow and the lower part is uniformly mottled brownish yellow and red. The upper few inches of the subsoil is loam, and the rest is clay loam. The underlying weathered material is mottled brownish gray, strong brown, and brownish yellow clay loam.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Georgeville, Grover, and Goldston soils.

This soil is moderately suited to farming. It is easy to keep in good tilth if crop residue is returned. Erosion is a moderate to severe hazard if the soil is cultivated and not protected. Minimum tillage and cover crops, including grasses and legumes, reduce runoff and erosion.

This soil is moderately suited to loblolly pine, yellow poplar, and red oak. There are no significant limitations to woodland use and management.

This soil is moderately suited to urban uses. Slope and moderate permeability in the subsoil limit the use of this soil as septic tank absorption fields. Good design and installation can generally compensate for these limitations.

The capability subclass is IIIe. The woodland suitability subclass is 3o.

WeD—Wedowee fine sandy loam, 10 to 15 percent slopes. This deep, well drained, sloping soil is on narrow, moderately long hillsides in the uplands of the Southern Piedmont. Slopes are complex and convex. Areas are 10 to 45 acres.

Typically, the surface layer is dark grayish brown fine sandy loam 4 inches thick. The subsoil extends to a depth of 35 inches. It is dominantly yellowish red. The lower part is mottled pale yellow. It is loam in the upper part and clay loam in the lower part. The underlying weathered material is mottled strong brown and very pale brown sandy clay loam that contains many fragments of highly weathered slate and phyllite.

This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Included with this soil in mapping are small areas of Georgeville, Grover, and Goldston soils.

This soil is poorly suited to farming because of slope and the severe erosion hazard. It is moderately suited to pasture.

This soil is moderately suited to loblolly pine, yellow poplar, and red oak. There are no significant limitations to woodland use and management.

This soil is moderately suited to most urban uses. Slope and moderate permeability in the subsoil limit the use of this soil as septic tank absorption fields.

The capability subclass is IVe. The woodland suitability subclass is 3o.

WuC—Wedowee-Urban land complex, 6 to 10 percent slopes. This well drained, gently sloping complex consists of areas of Wedowee soils and Urban land so intermingled that they could not be mapped separately at the scale selected. The unit is on smooth ridgetops and hillsides in the uplands of the Southern Piedmont. Areas range from 10 to 100 acres.

The Wedowee soils make up about 55 percent of each mapped area. Typically, the surface layer is grayish brown loam about 6 inches thick. The subsoil extends to a depth of 30 inches. It is dominantly clay loam throughout. It is brownish yellow and the lower part is mottled with strong brown and yellowish red. The underlying material to a depth of 45 inches or more is weathered slate and phyllite.

These soils are low in natural fertility and organic matter content. They are medium acid or very strongly acid throughout. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 35 percent of each mapped area. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are idle areas of Wedowee clay loam that is eroded. Most areas of eroded soils are dissected by shallow gullies. Also included are small intermingled areas of Georgeville soils, and a few small areas where the soil is less than 20 inches thick over the underlying material.

The Wedowee soils are well suited to most urban uses. Moderate permeability limits the use of the soils as septic tank absorption fields. Good design and proper installation can commonly compensate for this limitation. The plants commonly used for landscaping and vegetable gardens grow well on these soils. The hazard of erosion is severe unless a permanent plant cover is established. Tillage across the slope and winter cover crops reduce erosion in vegetable gardens.

WuD—Wedowee-Urban land complex, 10 to 15 percent slopes. This well drained, sloping complex consists of areas of Wedowee soils and Urban land so intermingled that they could not be mapped separately at the scale selected. It is on hillsides in the uplands of the Southern Piedmont. Areas range from 10 to 75 acres.

The Wedowee soils make up about 70 percent of each mapped area. Typically, the surface layer is dark grayish brown fine sandy loam about 4 inches thick. The subsoil extends to a depth of about 35 inches. It is yellowish red. The lower part is mottled with strong brown and very pale brown. The upper part of the subsoil is loam, the middle part is clay loam, and the lower part is sandy loam. Below this to a depth of 45 inches or more is weathered slate and phyllite.

These soils are low in natural fertility and organic matter content. They are strongly acid or very strongly acid throughout. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 20 percent of each mapped area. The soils have been altered by cutting, filling, and shaping for residences and streets.

Included in mapping are small areas of Goldston and Georgeville soils. Also included are small areas where the surface layer is eroded.

The Wedowee soils are poorly suited to most urban uses because of slope. Moderate permeability in the subsoil limits the use of the soils as septic tank absorption fields. Good design and construction or modification of the slope can sometimes compensate for these limitations. The hazard of erosion is severe unless a permanent plant cover is established. Tilling across the slope and establishing winter cover crops help to control erosion in areas used for vegetable gardens.

WvB—Wickham-Urban land complex, 2 to 6 percent slopes. This complex consists of areas of Wickham soils and Urban land so intermingled that they could not be mapped separately at the scale selected. It is very gently sloping and is mostly on stream terraces slightly downstream from the uplands of the Southern Piedmont. Areas are 25 to 200 acres.

The Wickham soils make up about 50 percent of this complex. Typically, they have a dark brown fine sandy loam surface layer about 8 inches thick. The subsoil extends to a depth of about 60 inches. The upper part is dark red sandy clay loam, the middle part is dark red and red clay loam, and the lower part is red sandy clay loam mottled with strong brown. The underlying material is red coarse sandy loam mottled with strong brown.

The Wickham soils are low in natural fertility and organic matter content. They are strongly acid or medium acid throughout except for the surface layer in limed areas. Permeability is moderate, and the available water capacity is medium. Tilth is good. The root zone is deep and is easily penetrated by the roots.

Urban land makes up about 35 percent of this unit. It is shopping centers, schools, parking lots, industrial sites, streets, commercial buildings, and private dwellings. The soils have been altered by cutting, filling, and shaping.

Included in mapping are small areas of Altavista and Dogue soils. Also included are areas where the subsoil is red throughout.

The Wickham soils are well suited to most urban uses. Good design and proper installation can compensate for the limitations. The plants commonly used for landscaping and vegetable gardens grow well on these soils.

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

James E. Helm, conservation agronomist, Soil Conservation Service, assisted in preparing this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Soil erosion is the major concern on about 23 percent of the soils in Richmond County. If slope is more than 2 percent, erosion is a hazard. Dothan, Faceville, and Orangeburg soils, for example, have slopes of 2 to 5 percent.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Faceville and Georgeville soils, and on soils that have a layer in or below the subsoil that limits the depth of the root zone. Such layers include a fragipan, as in Ailey and Vaucluse soils, or bedrock, as in Goldston soils. Second, erosion on farmland results in sedimentation of streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In some sloping fields, tilling or preparing a good seedbed is difficult on eroded spots because the original friable surface soil has been eroded away. Such spots are considered inclusions in the mapping of Orangeburg soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land, also provide nitrogen, and improve tilth for the following crop.

Slopes are so short and irregular that contour tillage or terracing is not practical in most areas of the sloping Orangeburg, Vaucluse, and Wedowee soils. On these soils, a cropping system that provides substantial vegetative cover is required to control erosion.

Minimizing tillage and leaving crop residue on the surface help increase infiltration and reduce the hazards

of runoff and erosion. These practices can be adapted to most soils in the survey area. No-tillage for corn, which is common on an increasing acreage, is effective in reducing erosion on sloping land and can be adapted to most soils in the survey area.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are most practical on the deep, well drained soils that have smooth and convex slopes. Very gently sloping and gently sloping Dothan, Faceville, Grover, and Orangeburg soils are suitable for terraces. The other soils are less suitable for terraces and diversions because of irregular slopes, excessive wetness in the terrace channels, or clayey subsoil which would be exposed in terrace channels.

Contour farming helps control erosion. It is best adapted to soils that have smooth, uniform slopes, including most areas of the very gently sloping or gently sloping Dothan, Faceville, Grover, and Orangeburg soils.

Information for the design of erosion control practices for each kind of soil is contained in the Technical Guide available in local offices of the Soil Conservation Service.

Soil drainage is the major management need on about 25 percent of the soils in the survey area. Some soils are so wet that the production of crops common to the area is generally not possible. These are the poorly drained Bibb, Chastain, Grady, Osier, Roanoke, and Rains soils, which make up about 24,000 acres in the survey area. Also in this category are the very poorly drained Hydraquents, which make up about 1,200 acres.

Unless artificially drained, the somewhat poorly drained soils are so wet that crops are damaged during most years. In this category are the Chewacla soils, which make up about 6,000 acres. Dogue and Goldsboro soils are moderately well drained, but they need artificial drainage most years. They make up about 7,000 acres.

Riverview soils have good natural drainage most of the year, but they tend to dry out slowly after rains.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in most areas of the moderately well drained and somewhat poorly drained soils used for intensive row cropping. Drains have to be more closely spaced in slowly permeable soils than in more permeable soils. Tile drainage is very slow in the Dogue soils. Adequate outlets for tile drainage systems are difficult to find in some areas, but in most places they are available.

The fertility of most soils in the survey area is naturally low. These soils are naturally acid. Chewacla and Riverview soils on flood plains are naturally higher in plant nutrients than most soils on uplands.

The soils on uplands are very strongly acid or strongly acid in their natural state. If they have never been limed, applications of ground limestone are required to raise the pH level sufficiently for good growth of legumes and other crops that grow only on nearly neutral soils. Available phosphorus and potash levels are naturally low in most of these soils. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields.

The fertilizer needs for specified crops on a particular soil can be accurately determined by soil tests. General fertilizer recommendations for field crops are also available (*3*). The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in the survey area have a surface layer of loamy sand that is low in content of organic matter. The structure of such soils is weak, but tilth generally is good. Regular additions of crop residue, manure, and other organic material can help improve soil structure and maintain soil tilth.

Fall plowing is generally not a good practice. Most of the cropland consists of sloping soils that are subject to damaging erosion if they are plowed in the fall.

Field crops suited to the soils and climate of the survey area are corn, cotton, and soybeans. Grain sorghum, sunflowers, peanuts, potatoes, and similar crops can be grown if economic conditions are favorable.

Wheat and rye are the common close-growing crops.

Special crops grown commercially in the survey area are vegetables and nursery plants. A small acreage throughout the survey area is used for watermelons, strawberries, sweet corn, tomatoes, peppers, and other vegetables. In addition, large areas can be adapted to other special crops such as blueberries, grapes, and many vegetables. Pecans are important nut trees.

Deep soils that have good natural drainage and that warm up early in spring are especially well suited to many vegetables and small fruits. In the survey area these are the Dothan, Faceville, Georgeville, Grover, Orangeburg, and Wickham soils that have slopes of less than 6 percent, and they total about 16,000 acres. Crops can generally be planted and harvested earlier on all of these soils than on the other soils in the survey area.

If adequately drained or adequately drained and protected from flooding, somewhat poorly drained Chewacla soils, moderately well drained Altavista, Dogue, and Goldsboro soils, and well drained Riverview soils are suited to a wide range of vegetable crops. These soils make up about 19,000 acres in the survey area.

Most of the well drained soils in the survey area are suitable for orchards and nursery plants. Soils in low positions where frost is frequent and air drainage is poor, however, generally are poorly suited to early vegetables, small fruits, and orchards.

Latest information and suggestions for growing special crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

In general, the soils in the survey area that are well suited to crops are also well suited to urban development. Data on specific soils in this soil survey should be used in planning future land use patterns.

About 28,800 acres in Richmond County is prime farmland. This is the land that is best suited to food, feed, forage, fiber, and oilseed crops and that is available for these uses. The prime farmland soils are the Altavista, Dogue, Dothan, Faceville, Georgeville, Goldsboro, Grover, Mecklinburg, and Orangeburg soils that have slopes of less than 8 percent. Careful consideration in planning is needed so that these soils can be retained in uses that will not preclude their later use as farmland.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w,* or *s,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification

of each map unit is given in the section "Detailed soil map units."

gardening and landscaping

Gerald Smith, extension horticulturist, and Doug Crater, extension horticulturist-floriculturist, University of Georgia, helped prepare this section.

Homeowners who landscape need to know the kinds of soil on their property and the trees and ornamental plants best suited to those soils.

The best soils for gardening have good internal drainage, a deep root zone, and optimum fertility. They hold enough water for plant use during prolonged dry periods, and they are permeable to water, air, and roots. Incorporating organic matter into the surface layer increases the available water capacity and improves tilth. Applying mulch helps to retain moisture and prevent evaporation. The degree of acidity of the soil should be considered in selecting plants.

Annuals such as ageratum, alyssum, larkspur, marigold, morningglory, petunia, portulaca, salvia, sunflower, verbena, vinca, and zinnia are particularly well suited to the droughty Ailey, Fuquay, Goldston, Lakeland, Lucy, and Troup soils. Roses, most annual flowers, most vegetables, and most grasses are suited to soils that are neutral or slightly acid. Dahlia, gladiolus, petunia, Shasta daisy, and zinnia grow best on neutral soils. Azaleas, camellias, and similar plants need acid soils. Such annuals as alyssum, burningbush, calendula, candytuft, celosia, dianthus, dustymiller, marigold, nasturtium, petunia, phlox, portulaca, verbena, and vinca tolerate soils that are not fertilized and are low in organic matter.

Most soils in Richmond County are well suited to the trees and ornamental plants commonly used in landscaping. Dothan, Faceville, Georgeville, Grover, Orangeburg, Riverview, Wedowee, and Wickham soils have high potential for yard and garden plants. In soils where the water table is high or the available water capacity low, only specified plants should be selected for planting. See table 7.

Table 7 groups the wet and dry soils in the survey area and lists the deciduous and evergreen trees, the shrubs, the vines, and the ground cover suited to the soils in each group. The table does not include all soils that are well suited to the plants listed. The chief considerations in determining suitability are a high water table or a low available water capacity.

Table 16 gives data on permeability, available water capacity, and soil reaction. Other information on characteristics of the soils is given in the section "Detailed soil map units." For information concerning suitability of plants not mentioned in this section, consult a local nurseryman or the county extension agent.

woodland management and productivity

Virgin forest covered most of Richmond County at the time of settlement. Today about 66 percent of the total land area is commercial forest (*9*).

The uplands support good stands of loblolly, longleaf, and slash pine and mixed upland hardwoods. The flood plains support yellow-poplar, American sycamore, sweetgum, red maple, eastern cottonwood, green ash, and several species of oak and other hardwoods.

The value of the wood products is substantial, but it could be increased. In addition to wood products, woodland provides habitat for wildlife and sites for recreation and protects the soil and water from erosion and sedimentation.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil; *s*, sandy texture; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: w, s, and r.

In table 8, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of

slight indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. The site index was determined at age 30 for eastern cottonwood, at age 35 for American sycamore, and at age 50 for all other species.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

Richmond County is well suited to recreation facilities. The Savannah River and its tributaries, the farm ponds, the lakes, and the smaller streams support such sports as fishing and boating. The uplands in the southern part of the county and areas in the eastern and western parts provide opportunity for hunting. Bobwhite quail, doves, squirrels, rabbits, migrating ducks, and deer are the main kinds of game. The wide flood plains along the major streams are good for hunting and other activities, such as nature study and hiking.

Most of the well drained, nearly level or very gently sloping soils on ridgetops are well suited to playgrounds, ball fields, tennis courts, and golf courses. Most of the nearly level to gently sloping soils are well suited to campsites and picnic areas. Many of the more sloping soils can be used for parks, paths and trails, and nature study areas.

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

wildlife habitat

Jesse Mercer, Jr., biologist, Soil Conservation Service, helped prepare this section.

Richmond County is about 66 percent woodland. This woodland provides habitat for deer, raccoon, and squirrel

and for many songbirds and nongame animals. The acreage in grain, although small, provides some habitat for quail, rabbit, and dove. About 250 acres of beaver ponds attract woodducks and other wildlife that depend on an aquatic environment. Tributaries of the Savannah River and small water impoundments provide most of the fish habitat.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse, seeds, and cones. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife

attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

engineering

Walker Carter, Jr., agricultural engineer, Soil Conservation Service, assisted in preparing this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils.

Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill, topsoil, sand, and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential and slopes of 15 to 25 percent. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 13 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 15.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They have little or no gravel and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have slopes of more

than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to slope and the hazard of cutbanks caving. Availability of drainage outlets is not considered.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 18.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas (*8*). Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "slaty." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 18.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

soil and water features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and

soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. Only saturated zones within a depth of about 6 feet are indicated. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

engineering index test data

Table 18 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by the Office of Materials and Research, Georgia Department of Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) (*1*) or the American Society for Testing and Materials (ASTM) (*2*).

The tests and methods are: AASHTO classification—M 145 (AASHTO); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO); Liquid limit—T 89 (AASHTO); Plasticity index—T 90 (AASHTO); Moisture density, Method A—T 99 (AASHTO); Volume change—Georgia Highway Standard (GHD-6).

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*10*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 19, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning flood plain, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, siliceous, acid, themic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*7*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*10*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Ailey series

The Ailey series consists of deep, well drained soils that are moderately permeable in the upper part of the subsoil and slowly permeable in the Bx horizon. These soils formed in thick beds of sandy and loamy marine sediment on uplands of the Sand Hills. The slope range is 2 to 12 percent.

Ailey soils are geographically associated with Dothan, Fuquay, Lakeland, Troup, and Vaucluse soils. Dothan soils do not have a fragipan, and their sandy A horizon is less than 20 inches thick. Fuquay soils do not have a fragipan. They have some horizons within a depth of 60

inches that are more than 5 percent plinthite. Lakeland soils are excessively drained and are sandy to a depth of more than 80 inches. Troup soils do not have a fragipan and are sandy to a depth of 40 to 80 inches. Vaucluse soils have an A horizon less than 20 inches thick.

Typical pedon of Ailey loamy sand, 5 to 8 percent slopes, in a wooded area 0.2 mile northeast of Butler Creek on Windsor Spring Road, 150 feet north of road:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; common very fine roots; strongly acid; abrupt smooth boundary.

A2—4 to 27 inches; light yellowish brown (10YR 6/4) loamy sand; single grained; loose; few very fine roots; 2 to 5 percent quartz pebbles; strongly acid; clear wavy boundary.

B1—27 to 30 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 2 to 5 percent quartz pebbles; sand grains coated and bridged with clay; very strongly acid; clear wavy boundary.

B2t—30 to 48 inches; brownish yellow (10YR 6/8) sandy clay loam; few medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

Bx1—48 to 65 inches; reddish yellow (5YR 6/8) coarse sandy clay loam; common medium prominent red (2.5YR 5/8), brownish yellow (10YR 6/6), and light brownish gray (10YR 6/2) mottles; moderate thick platy structure parting to moderate medium angular blocky; firm, brittle; patchy clay films mostly on horizontal faces of peds; few very fine roots more than 4 inches apart; very strongly acid; clear wavy boundary.

Bx2—65 to 75 inches; reddish yellow (5YR 6/8) coarse sandy loam; common medium prominent red (2.5YR 5/8), brownish yellow (10YR 6/8), and light brownish gray (10YR 6/2) mottles; massive parting to weak coarse subangular blocky structure; firm, brittle in place, friable if displaced; few thin patchy clay films on horizontal faces of peds in old root channels; few pebbles; very strongly acid.

Solum thickness is 60 to 75 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 20 to 36 inches thick. The Al or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3, 4, or 6.

The B1 horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. The Bt horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 6 or 8.

The Bx horizon is at a depth of 36 to 55 inches. This horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 6 or 8. It has few to many fine or medium brown, gray, yellow, or red mottles. In places the Bx horizon is variegated brown, gray, yellow, or red.

Altavista series

The Altavista series consists of deep, moderately well drained, moderately permeable soils. These soils formed in fluvial and marine sediment. They are on stream terraces slightly downstream from the uplands of the Southern Piedmont. The seasonal high water table is within 1.5 to 2.5 feet of the surface late in winter and early in spring. The slope range is 0 to 2 percent.

Altavista soils are geographically associated with Dogue, Roanoke, and Wickham soils. Dogue soils and poorly drained Roanoke soils are clayey. Wickham soils are redder and better drained than Altavista soils.

Typical pedon of Altavista sandy loam, 0 to 2 percent slopes, in a wooded area 0.2 mile west of Georgia Highway 56 spur on Perkins Road, 100 feet south of road:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; very friable; many very fine and medium roots; very strongly acid; abrupt wavy boundary.

B1—8 to 11 inches; light yellowish brown (10YR 6/4) sandy clay loam; weak medium subangular blocky structure; friable; common very fine and fine roots; common very fine pores; strongly acid; clear wavy boundary.

B21t—11 to 16 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium faint light yellowish brown (10YR 6/4) and pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—16 to 24 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium faint light yellowish brown (10YR 6/4) and common medium distinct light brownish gray (10YR 6/2) and reddish yellow (5YR 6/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; few very fine pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—24 to 41 inches; mottled brownish yellow (10YR 6/6), yellowish brown (10YR 5/8), gray (10YR 6/1), and red (2.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

C1—41 to 63 inches; mottled brownish yellow (10YR 6/6) and light gray (10YR 7/1) sandy loam that has common medium pockets of loamy sand and sandy clay loam; massive; friable; few pebbles; strongly acid; clear wavy boundary.

IIC2—63 to 70 inches; light gray (10YR 7/1) sandy clay; common medium distinct brownish yellow (10YR

6/6) and common medium distinct red (2.5YR 4/6) mottles; massive; firm; strongly acid.

Solum thickness ranges from 34 to 48 inches. The soil is very strongly acid to medium acid throughout except for the surface layer in limed areas.

The A horizon is 7 to 18 inches thick. The Ap and A1 horizons have hue of 10YR, value of 4 or 5, and chroma of 2 to 4. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The B1 horizon has hue of 10YR, value of 6, and chroma of 3, 4, or 6. In some pedons this horizon is mottled. Mottles are few or common, fine or medium, and brown, yellow, or red.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 3, 4, 6, or 8. The B22t and the B23t horizons have hue of 10YR, value of 6, and chroma of 4 or 6. Mottles are common or many, medium or coarse, and red, gray, yellow, and brown throughout the B horizon.

Some pedons have a B3 horizon. This horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 4 or 6. In some pedons it is mottled with gray, brown, and yellow. It is sandy loam or sandy clay loam.

The C horizon commonly is stratified and ranges from sandy loam in the upper strata to clay in the lower strata.

Bibb series

The Bibb series consists of deep, poorly drained, moderately permeable soils that formed in loamy alluvial sediment. These nearly level soils are on flood plains of the Southern Coastal Plain. Bibb soils commonly are saturated in winter and spring. The slope range is 0 to 2 percent.

Bibb soils are geographically associated with Dogue, Osier, Rains, and Roanoke soils. The moderately well drained Dogue soils and poorly drained Rains and Roanoke soils have an argillic horizon. They commonly are in slightly higher lying areas than Bibb soils. Osier soils are on the same flood plain with Bibb soils but are less than 15 percent silt and clay in the control section.

Typical pedon of Bibb fine sandy loam in an area of Bibb and Osier soils in a wooded area 0.7 mile southwest of Georgia Highway 56 on Goshen Road, 100 feet south of road:

A11—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many very fine, fine, and medium roots; strongly acid; clear smooth boundary.

A12g—6 to 16 inches; grayish brown (10YR 5/2) fine sandy loam; common medium distinct gray (10YR 6/1) and yellowish brown (10YR 5/6) mottles; weak fine granular structure; very friable common fine and medium roots; strongly acid; clear wavy boundary.

C1g—16 to 30 inches; gray (N 5/0) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; few fine and medium roots; very strongly acid; clear gradual boundary.

C2g—30 to 40 inches; light gray (10YR 7/1) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; massive; very friable; few medium and coarse roots; very strongly acid; gradual wavy boundary.

C3g—40 to 52 inches; gray (10YR 5/1) loamy fine sand; common medium distinct dark yellowish brown (10YR 4/4) mottles; massive; very friable; few coarse roots; very strongly acid; gradual smooth boundary.

C4g—52 to 62 inches; light gray (10YR 7/2) loamy fine sand; common medium distinct white (10YR 8/2) mottles; massive; very friable; few coarse roots; very strongly acid; clear smooth boundary.

Thickness of the sediment is 62 inches or more. The soil is strongly acid or very strongly acid except for the surface layer in limed areas.

The A horizon is 6 to 18 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. In some pedons the A12g horizon is mottled with brown, gray, or yellow.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 0 to 2. Mottles range from few to many. They are fine or medium and red, brown, and yellow. In some pedons the lower part of the C horizon is mottled with white. The texture is loamy fine sand, sandy loam, loam, or silt loam.

Chastain series

The Chastain series consists of deep, poorly drained, slowly permeable soils that formed in thick clayey sediment from uplands of the Southern Piedmont. These nearly level soils are in slight depressions in flood plains along the Savannah River. They commonly are saturated in winter and spring. Slope is less than 1 percent.

Chastain soils are geographically associated with Chewacla and Riverview soils. Chewacla and Riverview soils are loamy throughout, are better drained than Chastain soils, and are on somewhat higher lying flood plains.

Typical pedon of Chastain loam in a wooded area 0.1 mile south of U.S. Highway 25 on Georgia Highway 56 spur, 0.5 mile northeast on paved road, and 180 feet north:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; many fine roots; strongly acid; gradual wavy boundary.

B21g—4 to 19 inches; gray (10YR 5/1) silty clay; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak fine and medium subangular blocky structure; firm;

common fine roots; strongly acid; gradual wavy boundary.
B22g—19 to 45 inches; gray (10YR 5/1) clay; common medium distinct dark yellowish brown (10YR 4/4) and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; strongly acid; gradual wavy boundary.
Cg—45 to 65 inches; gray (10YR 6/1) clay; common medium distinct yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) mottles; massive; firm; strongly acid.

Solum thickness ranges from 40 to 72 inches. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 6 inches thick. It has a hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 1 to 3.

The B horizon has hue of 5Y to 10YR or N, value of 5 or 6, and chroma of 0 or 1. Mottles range from few to many and are brown or red. The B2g horizon is clay loam, silty clay, or clay.

The C horizon has colors like those in the B horizon, and it is clay or silty clay.

Chewacla series

The Chewacla series consists of deep, somewhat poorly drained, moderately permeable loamy soils that formed in thick alluvial sediment from uplands of the Southern Piedmont. These nearly level soils are mainly on moderately broad flood plains near the Savannah River. They are saturated from late in fall to early in spring. The slope range is 0 to 2 percent.

Chewacla soils are geographically associated with Chastain and Riverview soils. Chastain soils are poorly drained. Riverview soils are better drained than Chewacla soils and are on slightly higher lying stream terraces.

Typical pedon of Chewacla silt loam in an area of Chewacla and Riverview association in a cultivated area 2.5 miles north of Butler Creek near levee, 0.l mile northwest on dirt road, and 400 feet west of road:

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; many very fine and fine roots; few fine flakes of mica; strongly acid; clear smooth boundary.
B21—5 to 19 inches; dark yellowish brown (10YR 4/4) loam; few fine distinct grayish brown and reddish brown mottles; weak medium subangular blocky structure; friable; common very fine roots; common fine flakes of mica; strongly acid; clear smooth boundary.
B22—19 to 23 inches; dark brown (10YR 4/3) loam; common medium distinct grayish brown (10YR 5/2) and dark brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; friable; few very fine roots; common fine flakes of mica; strongly acid; clear wavy boundary.
B23g—23 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles and few fine distinct dark brown mottles; moderate medium subangular blocky structure; friable; common fine flakes of mica; few fine black nodules; strongly acid; gradual wavy boundary.
B3g—50 to 60 inches; gray (10YR 6/1) silty clay loam; common medium distinct dark grayish brown (10YR 4/2) mottles; massive; friable; common black nodules; common fine flakes of mica; strongly acid.

Solum thickness is 39 to 70 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 5 to 10 inches thick. It has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 3 or 4. It is silt loam or fine sandy loam.

Some pedons have a B1 horizon. This horizon has hue of 7.5YR or 10YR, value of 4, and chroma of 3 or 4. In some pedons it has few or common mottles of 10YR hue, 5 or 7 value, and 1 to 3 chroma. The texture is silt loam or sandy loam.

The upper part of the B2 horizon has hue of 5YR, 7.5YR, or 10YR; value of 4 to 6; and chroma of 3 or 4. Mottles have hue of 10YR, value of 5 to 7, and chroma of 1 to 4 and are few to many. The lower part of the B2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 3. Mottles are few to many and fine or medium. The B2 horizon is silt loam, loam, clay loam, or silty clay loam.

The B3 horizon in most places is gray with few to many brown or yellow mottles.

Dogue series

The Dogue series consists of deep, moderately well drained, moderately slowly permeable soils that formed in fluvial and marine sediment. These soils are on stream terraces slightly downstream from the uplands of the Southern Piedmont. The seasonal water table is within 2 to 3 feet of the surface late in winter and early in spring. The slope range is 0 to 3 percent.

Dogue soils are geographically associated with Altavista, Roanoke, and Wickham soils. Roanoke soils are poorly drained. Altavista soils and the well drained Wickham soils are fine loamy.

Typical pedon of Dogue fine sandy loam, 0 to 3 percent slopes, in a cultivated area 1.9 miles south of Tobacco Road on Georgia Highway 56 spur, 450 feet east of highway:

Ap—0 to 8 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many very fine roots; strongly acid; abrupt smooth boundary.
B21t—8 to 17 inches; yellowish brown (10YR 5/4) clay; few fine distinct light gray mottles, and common

medium distinct strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; firm; common very fine and fine roots; common very fine pores; thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.

B22t—17 to 36 inches; yellowish brown (10YR 5/6) clay; common medium distinct strong brown (7.5YR 5/8) and gray (10YR 6/1) mottles, and few fine prominent reddish brown mottles; moderate fine subangular blocky structure; firm; common fine roots; common fine pores; common patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—36 to 52 inches; mottled gray (10YR 6/1) and strong brown (7.5YR 5/8) clay; few fine prominent reddish brown mottles; moderate fine subangular blocky structure; firm; few very fine pores; common patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B3—52 to 56 inches; gray (10YR 6/1) sandy clay; common medium distinct yellowish brown (10YR 5/8) and light gray (10YR 7/1) mottles; weak medium subangular blocky structure; friable; common very fine flakes of mica; few medium pockets of sandy clay loam; strongly acid; gradual wavy boundary.

C—56 to 62 inches; mottled gray (10YR 6/1) and light gray (10YR 7/1) sandy clay loam; massive; friable; common very fine flakes of mica; common medium pockets of sandy clay and sandy clay loam; strongly acid.

Solum thickness is 40 to 60 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 8 to 12 inches thick. It has hue of 10YR and 2.5Y, value of 3 to 6, and chroma of 1 to 3.

Some pedons have a B1 horizon. This horizon has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. In some pedons, it has few or common fine or medium mottles of brown or yellow. The texture is sandy clay loam or sandy clay.

The upper part of the B2t horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 or 6. In some pedons it has few or common, fine or medium mottles of red, gray, or brown. The lower part of the B2t horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 2 to 4, 6, or 8. Few to many fine to coarse mottles of red, gray, or brown occur throughout this horizon. In some pedons the B2t horizon is mottled so extensively that it does not have a matrix color.

The B23t and B3 horizons have hue of 7.5YR and 10YR, value of 4 to 7, and chroma of 1 to 4 or 6. In some pedons they are mottled with gray, brown, and yellow. The B3 horizon is sandy loam, sandy clay loam, or sandy clay.

The C horizon is coarse sand, sand, loamy sand, sandy loam, or sandy clay loam.

Dothan series

The Dothan series consists of deep, well drained soils that are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. These soils formed in dominantly loamy marine sediment on uplands of the Southern Coastal Plain. The slope is dominantly 3 percent but ranges from 0 to 5 percent.

Dothan soils are geographically associated with Fuquay, Orangeburg, and Vaucluse soils. Fuquay soils are sandy to a depth of 20 to 40 inches. Orangeburg soils have a red B horizon and do not contain plinthite. Vaucluse soils have a fragipan in the subsoil.

Typical pedon of Dothan loamy sand, 0 to 2 percent slopes, in an idle area 1.1 miles south of Hephzibah High School on Story Mill Road, 100 feet west of road:

Ap—0 to 10 inches; dark brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; common nodules of ironstone; strongly acid; abrupt smooth boundary.

B1—10 to 12 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; common nodules of ironstone; strongly acid; clear wavy boundary.

B21t—12 to 38 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots and pores; few clean sand grains; common nodules of ironstone; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—38 to 48 inches; yellowish brown (10YR 5/8) sandy clay loam; few medium prominent yellowish red (5YR 4/6) and red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; friable; common fine pores; thin patchy clay films on faces of peds; few nodules of ironstone; 3 percent nodular plinthite; very strongly acid; gradual wavy boundary.

B23t—48 to 54 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent yellowish red (5YR 4/6) and red (2.5YR 4/8) mottles, and common medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; common fine pores; thin patchy clay films on faces of peds; 5 to 8 percent nodular plinthite; very strongly acid; gradual wavy boundary.

B24t—54 to 65 inches; yellowish brown (10YR 5/8) sandy clay loam; many medium prominent yellowish red (5YR 4/6) and red (2.5YR 4/8) mottles; common medium distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; thin patchy clay films on faces of peds; 10 to 15 percent nodular plinthite; very strongly acid.

Solum thickness is 60 to 72 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Depth to horizons that are 5 to 15 percent plinthite ranges from 27 to 58 inches.

The A horizon is 8 to 15 inches thick. In some pedons the Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. In others it has hue of 2.5Y, value of 5 or 6, and chroma of 4. The A2 horizon in some pedons has the same range in color as the Ap horizon. Nodules of ironstone make up 2 to 4 percent of the A horizon.

The B1 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma or 6 or 8. In some pedons the Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 or 8. In others it has hue of 2.5Y, value of 7, and chroma of 6 or 8. In some pedons the lower part of the Bt horizon has many medium and coarse mottles of brown, red, and gray. Nodules of ironstone make up 2 to 5 percent of the upper part of the Bt horizon.

Faceville series

The Faceville series consists of deep, well drained, moderately permeable soils that formed mainly in clayey marine sediment. These soils are on uplands of the Southern Coastal Plain. The slope is dominantly less than 5 percent but ranges from 0 to 8 percent.

Faceville soils are geographically associated with Dothan and Orangeburg soils. Dothan soils contain plinthite. Their B horizon is more yellow than that of Faceville soils and contains less clay. Orangeburg soils commonly have a B horizon that is as red as that of Faceville soils but contains less clay.

Typical pedon of Faceville sandy loam, 2 to 5 percent slopes, in a cultivated field 0.9 mile west of Bath Edie Road on U.S. Highway 1, 0.2 mile north on field road, 150 feet west of road:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

B1—8 to 11 inches; strong brown (7.5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable; few patchy clay films on faces of peds; common medium black concretions; common fine pores; common fine roots; strongly acid; abrupt smooth boundary.

B21t—11 to 24 inches; yellowish red (5YR 5/6) sandy clay; moderate medium subangular blocky structure; friable; common patchy clay films on faces of peds; few very fine black concretions; strongly acid; gradual wavy boundary.

B22t—24 to 52 inches; red (2.5YR 4/8) sandy clay; few medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—52 to 62 inches; red (2.5YR 4/6) sandy clay; common medium distinct strong brown (7.5YR 5/8) and light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; common patchy clay films on faces of peds; strongly acid.

Solum thickness is 65 to 72 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The Ap horizon is 6 to 10 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The B1 horizon has hue of 2.5YR to 7 5YR, value of 4 or 5, and chroma of 6 or 8.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It is commonly mottled with brown, yellow, and red in the middle and lower parts.

Fuquay series

The Fuquay series consists of deep, well drained soils that are moderately permeable in the upper part of the subsoil and slowly permeable in the lower part. These soils formed in sandy and loamy marine sediment on uplands of the Southern Coastal Plain. The slope is dominantly 3 percent but ranges from 1 to 8 percent.

Fuquay soils are geographically associated with Dothan, Lucy, and Troup soils. Dothan soils have an A horizon less than 20 inches thick. Lucy soils have a yellowish red or red subsoil that does not contain plinthite. Troup soils have sandy surface layer 40 to 80 inches thick.

Typical pedon of Fuquay loamy sand, 1 to 5 percent slopes, in a wooded area 2.2 miles south on U.S. Highway 25 from the junction with Georgia Highway 88, 0.4 mile east along powerline right-of-way:

Ap—0 to 5 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; few nodules of ironstone; common fine roots; strongly acid; clear smooth boundary.

A21—5 to 12 inches; pale brown (10YR 6/3) loamy sand; weak fine granular structure; very friable; few nodules of ironstone; common fine roots; strongly acid; clear wavy boundary.

A22—12 to 30 inches; very pale brown (10YR 7/4) loamy sand; weak fine granular structure; very friable; few nodules of ironstone; few fine roots; strongly acid; clear wavy boundary.

B1—30 to 35 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; very friable; few nodules of ironstone; few fine roots; strongly acid; clear wavy boundary.

B21t—35 to 41 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few nodules of ironstone; few patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—41 to 48 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium prominent red (2.5YR 4/8) mottles, and common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; 5 to 10 percent plinthite; few patchy clay films on faces of peds; strongly acid; gradual smooth boundary.
B23t—48 to 65 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), and red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; 15 percent plinthite; strongly acid.

Solum thickness is 80 to 85 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The Ap horizon is 4 to 10 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 3, 4, or 6. A few nodules of ironstone commonly are in the surface layer and throughout the A2 horizon.

The B1 horizon has hue of 7.5YR, 10YR, or 2.5Y; value of 5 or 6; and chroma of 4, 6, or 8.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. The lower part of the Bt horizon is mottled with red, yellowish brown, strong brown, brownish yellow, or gray. Plinthite content is 5 to 15 percent.

Georgeville series

The Georgeville series consists of deep, well drained, moderately permeable soils. These soils formed in material weathered from fine grained slate and phyllite. They are on ridgetops and hillsides on uplands of the Southern Piedmont. The slope range is 2 to 10 percent.

Georgeville soils are geographically associated with Goldston, Grover, and Wedowee soils. These associated soils have hue of 5YR or yellower. They also have a thinner solum. Grover soils are fine loamy. The thin B horizon of Goldston soils is 35 percent or more coarse fragments.

Typical pedon of Georgeville loam in an area of Georgeville-Urban land complex, 2 to 8 percent slopes, in an idle area 0.2 mile east of Interstate Highway 20 on Washington Road, 900 feet north of road:

Ap—0 to 5 inches; dark brown (10YR 4/3) loam; weak fine granular struture; friable; many fine and medium roots; few quartz pebbles; strongly acid; abrupt wavy boundary.
B1—5 to 10 inches; yellowish red (5YR 5/8) silty clay loam; weak medium subangular blocky structure; friable; common fine roots; few quartz pebbles; strongly acid; clear wavy boundary.
B21t—10 to 26 inches; red (2.5YR 4/8) silty clay; moderate medium subangular blocky structure; firm; few fine and medium roots; few quartz pebbles; common thin patchy clay films on faces of peds, strongly acid; clear wavy boundary.
B22t—26 to 38 inches; red (2.5YR 4/8) silty clay; common fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; continuous clay films on faces of peds; strongly acid; gradual wavy boundary.
B3—38 to 52 inches; red (2.5YR 4/8) silty clay loam; common medium distinct strong brown (7.5YR 5/8) mottles and common fragments of light gray (10YR 7/1) saprolite; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.
Cr—52 to 64 inches; mottled yellowish red (5YR 5/8), light gray (10YR 7/1), dark red (10R 3/6), and brownish yellow (10YR 6/8) saprolite; rock controlled structure; crushes to friable silty clay loam; strongly acid.

Solum thickness is 48 to 65 inches or more. Depth to hard bedrock is 6 to 10 feet or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 8 inches thick. It has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3, 4, or 6.

The B1 horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It is clay or silty clay. The lower part of the Bt horizon is mottled with red, brown, or gray.

The B3 horizon commonly has hue of 2.5YR, or 5YR, value of 4 or 5, and chroma of 6 or 8. In some pedons it has few to many fine or medium mottles of red, brown, yellow, or gray throughout.

The Cr horizon is weathered slate or phyllite that is mottled with yellowish red, brownish yellow, light red, red, strong brown, dark red, and light gray. The weathered slate and phyllite is silty clay loam, silty clay, or loam.

The Georgeville soils in Richmond County are considered a taxadjunct to the series because their B3 horizon contains gray mottles that are not typical of the series.

Goldsboro series

The Goldsboro series consists of deep, moderately well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on broad low-lying uplands of the Southern Coastal Plain. Goldsboro soils have a seasonally high water table that is within 2.5 to 3.0 feet of the surface in winter. The slope range is 0 to 2 percent.

Goldsboro soils are geographically associated with Dothan, Orangeburg, and Rains soils. Dothan and Orangeburg soils are well drained. Dothan soils contain

plinthite. Orangeburg soils have a reddish Bt horizon. Rains soils are poorly drained.

Typical pedon of Goldsboro sandy loam in an idle area 0.6 mile north of Butler Creek on Georgia Highway 56 spur, 0.7 mile west on Georgia Regional Hospital Road, 300 feet north of road:

Ap—0 to 8 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; very friable; few fine roots; medium acid; clear smooth boundary.

A2—8 to 11 inches; light yellowish brown (10YR 6/4) loamy sand; common medium distinct grayish brown (10YR 5/2) mottles; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

B21t—11 to 20 inches; brownish yellow (10YR 6/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—20 to 24 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) and yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—24 to 36 inches; yellowish brown (10YR 5/8) sandy clay loam; many medium distinct light brownish gray (10YR 6/2) and yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B24t—36 to 56 inches; mottled yellowish brown, light yellowish brown, yellowish red, and light gray sandy clay loam; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B25t—56 to 84 inches; mottled yellowish brown, yellowish red, red, and light gray sandy clay; moderate medium subangular blocky structure; firm; common coarse pockets of sandy clay loam; patchy clay films on faces of peds; strongly acid.

Solum thickness is 62 to 84 inches or more. The soil is strongly acid or very strongly acid except for the surface layer in limed areas.

The A horizon is 10 to 20 inches thick. The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 6 or 8. It has few or common fine or medium gray mottles at a depth of 22 to 27 inches. The lower part of the Bt horizon commonly is mottled with red, brown, and gray.

Goldston series

The Goldston series consists of shallow, well drained or excessively drained, moderately rapidly permeable soils that formed in material weathered from slate. These soils are on upland hillsides of the Southern Piedmont. The slope range is 10 to 25 percent.

Goldston soils are geographically associated with Georgeville and Wedowee soils. The associated soils have an argillic horizon and do not have hard bedrock between depths of 20 and 30 inches. Also, Georgeville soils commonly are less sloping than Goldston soils.

Typical pedon of Goldston slaty silt loam, 10 to 25 percent slopes, in a wooded area 300 feet east of Raes Creek on Wheeler Road, 75 feet north:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) slaty silt loam; weak fine granular structure; very friable; many very fine roots; common medium roots; 30 percent fragments of slate; strongly acid; clear wavy boundary.

B—3 to 13 inches; brown (10YR 4/3) slaty silt loam; weak medium granular structure; very friable; common very fine and fine roots; 50 percent fragments of slate; strongly acid; gradual wavy boundary.

Cr—13 to 20 inches; brown (10YR 4/3) weathered slate rock that crushes to silt loam; friable; few fine roots; 70 percent gray fragments of slate; strongly acid.

R—20 to 22 inches; brownish gray and yellowish brown, slightly weathered fractured slate bedrock that is tilted.

Solum thickness ranges from 10 to 18 inches. Depth to hard rock ranges from 20 to 30 inches. Fragments of slate range from 0.5 inch to 4.0 inches in width throughout the solum. By volume, they range from 15 to 30 percent in the A horizon and 35 to 70 percent in the B horizon. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 2 to 6 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 1 to 3.

The B horizon has hue of 10YR, value of 5 to 7, and chroma of 3, 4, or 6. An argillic horizon about 3 to 10 inches thick is in about 40 percent of each pedon. This horizon is similar in color to the B horizon and is silt loam or silty clay loam.

The Cr horizon is weathered slate or phyllite that is mottled with yellowish red, brownish yellow, light red, red, strong brown, dark red, and light gray. The weathered slate or phyllite is silty clay loam, silty clay, or loam.

Grady series

The Grady series consists of deep, poorly drained, slowly permeable soils that formed in clayey marine sediment. These nearly level soils are in depressions of

the Southern Coastal Plain. In places they commonly are ponded. In others the water table is within 1 foot of the surface in winter and spring. The slope is dominantly less than 1 percent but ranges to 2 percent.

Grady soils are geographically associated with Dothan, Fuquay, and Rains soils. The well drained Dothan and Fuquay soils contain plinthite and are on higher lying landscapes than Grady soils. The poorly drained Rains soils are in a fine-loamy family.

Typical pedon of Grady loam in a wooded area 0.9 mile west of Bath Edie Road on Georgia Highway 88, 900 feet north on field road; 200 feet west of road:

A1—0 to 4 inches; very dark gray (10YR 3/1) loam; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.

B21tg—4 to 11 inches; gray (10YR 6/1) clay; moderate medium subangular blocky structure; firm; common fine and few medium roots; thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

B22tg—11 to 45 inches; light gray (10YR 7/1) clay; common fine prominent red (2.5YR 4/6) mottles; moderate fine subangular blocky structure; firm; few medium roots; few fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23tg—45 to 58 inches; light gray (10YR 7/1) clay; few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; thin patchy clay film on faces of peds; very strongly acid; gradual wavy boundary.

B24tg—58 to 62 inches; mottled light gray (10YR 7/1) and yellowish brown (10YR 5/8) clay; moderate medium subangular blocky structure; firm; common fine pores; thin patchy clay films on faces of peds; very strongly acid.

Solum thickness is 60 to 70 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 to 8 inches thick. The A1 horizon or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1.

Some pedons have a B1g horizon. This horizon has hue of 10YR, value of 5 or 6, and chroma of 1. Some pedons contain few or common mottles of brown or gray.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1. It has few to many mottles of brown, yellow, red, and gray. The Btg horizon is sandy clay or clay. The lower part of the Btg horizon commonly is mottled with gray, brown, and red.

Grover series

The Grover series consists of deep, well drained, moderately permeable soils that formed in material weathered from mica gneiss and mica schist. Grover soils are on upland ridgetops and hillsides of the Southern Piedmont. The slope ranges from 2 to 10 percent but is dominantly 2 to 6 percent.

Grover soils are geographically associated with Georgeville and Wedowee soils. The associated soils have more clay in the Bt horizon than Grover soils. Georgeville and Wedowee soils have less mica throughout.

Typical pedon of Grover sandy loam, 2 to 6 percent slopes, in a wooded area 0.1 mile north of Dennis Road on Alice Lane, east side of Alice Lane:

Ap—0 to 10 inches; grayish brown (10YR 5/2) sandy loam; weak fine granular structure; very friable; common angular quartz pebbles; many very fine roots; medium acid; abrupt smooth boundary.

B1—10 to 13 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; many fine roots; medium acid; clear wavy boundary.

B21t—13 to 21 inches; yellowish brown (10YR 5/8) clay loam; moderate medium subangular blocky structure; friable; common very fine flakes of mica; few fine roots; common patchy clay films on faces of peds; medium acid; gradual wavy boundary.

B22t—21 to 28 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium distinct reddish yellow (5YR 6/8) and light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; common small and medium flakes of mica; few fine roots; common patchy films on faces of peds; medium acid; gradual wavy boundary.

B3—28 to 33 inches; strong brown (10YR 5/8) sandy clay loam; many medium distinct yellowish red (7.5YR 5/6), red (2.5YR 5/8), and light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; common flakes of mica; evidence of tilting of parent material; medium acid; gradual wavy boundary.

C1—33 to 43 inches; mottled yellowish brown (10YR 5/8), red (2.5YR 5/8), and yellowish red (5YR 5/8) sandy loam; massive; friable; many fine medium and large flakes of mica that give a very greasy feel; medium acid; gradual wavy boundary.

Cr—43 to 60 inches; coarsely mottled light yellowish brown (10YR 6/4) reddish yellow (5YR 6/8), and light gray (10YR 7/2) saprolite weathered from mica schist that crushes to sandy loam; massive; rock controlled structure; very friable; many fine and medium flakes of mica; medium acid.

Solum thickness is 30 to 39 inches. Depth to bedrock is more than 6 feet. The soil is medium acid or strongly acid except for the surface layer in limed areas. Some pedons have few or common coarse fragments.

The Ap or A1 horizon is 6 to 10 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2.

Some pedons have an A2 horizon. This horizon is about 3 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 3, 4, or 6. It is sandy loam or coarse sandy loam.

Some pedons have a B1 horizon. This horizon has hue of 10YR, value of 5 or 6, and chroma of 6 or 8. It is sandy clay loam or sandy loam.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 8. In some pedons, mottles of brown, red, or yellow range from few to many. Flakes of mica are common or many. Texture is sandy clay loam or clay loam.

The B3 horizon has hue of 5YR, 7.5YR, or 10YR, value of 5 or 6, and chroma of 4, 6, or 8. It has common or many mottles of red, brown, or yellow throughout. This horizon is sandy clay loam or clay loam. Flakes of mica are common or many.

The C horizon is commmonly gray, weathered micaceous saprolite mottled with yellow, red, and brown.

The Grover soils in Richmond County are slightly less acid than is defined in the range for the series. For this reason, they are considered a taxadjunct to the series.

Lakeland series

The Lakeland series consists of excessively drained, very rapidly permeable soils that formed in sandy marine deposits. These soils are on broad ridgetops and hillsides on uplands of the Sand Hills. Slopes are dominantly about 3 percent but range from 2 to 15 percent.

Lakeland soils are geographically associated with Ailey, Fuquay, Troup, and Vaucluse soils. Ailey and Vaucluse soils have a loamy, brittle Bx horizon. Ailey soils are arenic. Fuquay and Troup soils have a loamy B horizon. Fuquay soils are sandy to a depth of 20 to 40 inches. Troup soils are sandy to a depth of 40 to 80 inches.

Typical pedon of Lakeland sand, 2 to 5 percent slopes, in a wooded area on Fort Gordon Post, 0.6 mile west of Range Road on McDuffie Road and 0.2 mile south of road:

A1—0 to 4 inches; grayish brown (10YR 5/2) sand; common medium distinct light yellowish brown (10YR 6/4) mottles in the lower part; single grained; loose; common medium and fine roots; strongly acid; clear smooth boundary.

C1—4 to 70 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

C2—70 to 85 inches; brownish yellow (10YR 6/6) sand; common medium distinct white (10YR 8/1) pockets of uncoated sand grains; single grained; loose; many uncoated sand grains; very strongly acid.

Thickness of the sand is 80 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon ranges from 3 to 6 inches in thickness. It has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The C horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma or 4, 6, or 8.

Lucy series

The Lucy series consists of deep, well drained, moderately permeable soils that formed in sandy and loamy marine sediment. These soils are on upland ridgetops and hillsides of the Southern Coastal Plain. The slope is dominantly less than 8 percent but ranges from 1 to 15 percent.

Lucy soils are geographically associated with Faceville, Orangeburg, and Troup soils. Faceville and Orangeburg soils have an A horizon less than 20 inches thick. Faceville soils are clayey. Troup soils are sandy.

Typical pedon of Lucy loamy sand, 5 to 8 percent slopes, in a wooded area, 1.1 miles south of Hephzibah-McBean Road on Henderson Road, 100 feet north of road:

Ap—0 to 11 inches; brown (10YR 5/3) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

A2—11 to 29 inches; strong brown (7.5YR 5/6) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

B1—29 to 32 inches; yellowish red (5YR 5/8) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

B21t—32 to 40 inches; red (2.5YR 5/8) sandy clay loam; medium subangular blocky structure; friable; few patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—40 to 80 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; patchy clay films on faces of peds; strongly acid.

Solum thickness is 60 to 80 inches or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 24 to 38 inches thick. The Al or Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 or 6.

The Bl horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. In some pedons it is mottled with yellow or brown below a depth of 36 inches. Texture is dominantly sandy clay loam but ranges to sandy loam.

Mecklenburg series

The Mecklenburg series consists of moderately deep, well drained, slowly permeable soils that formed in material weathered from acidic and basic crystalline rock. These soils are on upland ridgetops and hillsides of the Southern Piedmont. The slope range is 2 to 6 percent.

Mecklenburg soils are geographically associated with Georgeville, Grover, and Wedowee soils. In contrast with Mecklenburg soils, Georgeville soils have a thicker solum and a lower base saturation. Grover and Wedowee soils have a less clayey subsoil that is lower in base saturation than that of Mecklenburg soils.

Typical pedon of Mecklenburg loam, 2 to 6 percent slopes, in a wooded area 0.3 mile northeast of Washington Road on Bertrand Road, 500 feet north of road:

Ap—0 to 7 inches; dark brown (7.5YR 4/4) loam; moderate medium granular structure; friable; many very fine and fine roots; few pebbles; slightly acid; clear smooth boundary.

B1—7 to 14 inches; reddish brown (5YR 5/4) loam; moderate fine subangular blocky structure; friable; thin patchy clay films on faces of peds; common very fine and medium roots; few pebbles; slightly acid; clear smooth boundary.

B21t—14 to 18 inches; yellowish red (5YR 5/6) silty clay; strong fine and medium subangular blocky structure; plastic; thin continuous clay films on faces of peds; few fine roots; slightly acid; clear wavy boundary.

B22t—18 to 27 inches; mottled yellowish red (5YR 5/6) and red (2.5YR 4/8) silty clay; strong fine and medium subangular blocky structure; plastic; thin continuous clay films on faces of peds; few fine roots; slightly acid; clear wavy boundary.

B3—27 to 31 inches; mottled yellowish brown (10YR 5/8), yellow (10YR 7/6), and strong brown (7.5YR 5/8) silty clay loam; weak medium platy structure; friable; few fine roots; common highly weathered fragments of basic rock; neutral; clear wavy boundary.

C1—31 to 35 inches; mottled yellowish brown (10YR 5/8), very pale brown (10YR 7/3), and strong brown (7.5YR 4/6) saprolite that crushes to loam; rock structure; neutral; abrupt wavy boundary.

Cr—35 to 37 inches; mottled light yellowish brown (10YR 6/4), yellowish brown (10YR 5/4), and brownish yellow (10YR 6/8) thin schist rock; neutral.

Solum thickness is 20 to 38 inches. The soil is slightly acid to neutral. Depth to hard rock is more than 60 inches.

The A horizon is 4 to 8 inches. It has hue of 7.5YR, value of 4 or 5, and chroma of 3 or 4.

The B1 horizon has hue of 5YR, value of 4 or 5, and chroma of 4, 6, or 8.

The Bt horizon has hue of 5YR, value of 4 or 5, and chroma of 6 or 8.

The B3 horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 6 or 8. In some pedons it is mottled with yellow and brown.

The C horizon is weathered basic rock that crushes to loam, silt loam, or silty clay loam.

The Mecklenburg soils in Richmond County are considered a taxadjunct to the series because they contain slightly more silt than is defined in the range for the series.

Orangeburg series

The Orangeburg series consists of deep, well drained, moderately permeable soils that formed in loamy marine sediment. These soils are on uplands of the Southern Coastal Plain. The slope range is 0 to 15 percent.

Orangeburg soils are geographically associated with Dothan, Faceville, Lucy, and Vaucluse soils. Dothan soils have a yellowish brown subsoil that contains plinthite. Vaucluse soils have a brittle layer in the subsoil. Faceville soils have a subsoil that is more clayey than that of Orangeburg soils. Lucy soils are sandy to a depth of 20 to 40 inches.

Typical pedon of Orangeburg loamy sand, 2 to 5 percent slopes, in a cultivated field, 1.4 miles south on U.S. Highway 25 from the junction with Georgia Highway 88, 300 feet east of highway:

Ap—0 to 10 inches; brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

B1—10 to 32 inches; yellowish red (5YR 4/6) sandy clay loam; weak fine subangular blocky structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

B21t—32 to 50 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; many fine roots; strongly acid; clear smooth boundary.

B22t—50 to 64 inches; red (2.5YR 4/6) sandy clay loam; common medium prominent reddish yellow (7.5YR 6/6) and strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; strongly acid.

Solum thickness is 70 to 90 inches. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4.

The B1 horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4, 6, or 8. It is sandy loam or sandy clay loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8.

Osier series

The Osier series consists of deep, poorly drained, rapidly permeable soils that formed in sandy alluvial sediment. These nearly level soils are on flood plains of the Southern Coastal Plain. A water table is less than 1 foot from the surface from late in fall until spring. The slope is dominantly less than 1 percent but ranges to 2 percent.

Osier soils are geographically associated with Bibb, Dogue, Rains, and Roanoke soils. Bibb soils are more than 15 percent silt and clay in the control section. Rains and Roanoke soils and the moderately well drained Dogue soils are in the slightly higher lying areas away from the stream channel and have a clayey control section.

Typical pedon of Osier loamy fine sand in an area of Bibb and Osier soils, in a wooded area 0.8 mile west of Windsor Spring Road on Wills Farmer Road, 150 feet south of road:

All—0 to 3 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; very strongly acid; clear wavy boundary.

A12g—3 to 13 inches; grayish brown (10YR 5/2) sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; gradual wavy boundary.

C1g—13 to 25 inches; gray (10YR 6/1) sand; single grained; loose; common medium roots; very strongly acid; gradual wavy boundary.

C2g—25 to 45 inches; dark gray (10YR 4/1) loamy fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

C3g—45 to 65 inches; gray (10YR 6/1) sand; single grained; loose; very strongly acid.

Thickness of the sandy layers is more than 60 inches. The soil is very strongly acid or strongly acid throughout. Thin strata of sand, loamy sand, or sandy loam commonly are in most horizons.

The A horizon is less than 16 inches thick in more than 50 percent of any pedon, but it ranges to 20 inches in thickness. It has hue of 10YR, value of 2 to 5, and chroma of 1 or 2.

In some pedons the Cg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. In others it has hue of 2.5Y, value of 4 to 7, and chroma of 0. It is coarse sand, sand, fine sand, or loamy fine sand. In some pedons it has few or common mottles of yellowish brown, grayish brown, and brownish yellow.

Rains series

The Rains series consists of deep, poorly drained, moderately permeable soils that formed in loamy fluvial and marine sediment. These nearly level soils are on flats and in slight depressions on stream terraces near the larger streams of the Southern Coastal Plain. The water table is within 1 foot of the surface from late in fall to early in spring. The slope is dominantly less than 1 percent but ranges to 2 percent.

Rains soils are geographically associated with Bibb, Goldsboro, and Osier soils. Bibb soils are coarse loamy and do not have a Bt horizon. The moderately well drained Goldsboro soils are on higher lying landscapes. Osier soils are sandy and do not have a Bt horizon.

Typical pedon of Rains loamy sand in an area of Rains-Urban land complex in a wooded area 0.8 mile west of Olive Road on Shirley Drive, 25 feet northwest of Shirley Drive:

A1—0 to 8 inches; dark gray (10YR 4/1) loamy sand; weak fine granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.

A2—8 to 16 inches; gray (10YR 6/1) loamy sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

B1g—16 to 24 inches; light gray (10YR 7/1) sandy clay loam; many medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; few medium roots; very strongly acid; gradual wavy boundary.

B21tG—24 to 60 inches; light gray (10YR 7/1) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; patchy clay films on faces of peds; few medium roots; very strongly acid; gradual wavy boundary.

Solum thickness is 60 to 70 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 8 to 18 inches thick. The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1.

The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

Some pedons have a B1g horizon. This horizon has hue of 10YR, value of 5 to 7, and chroma of 1.

The Btg horizon has hue of 10YR or N, value of 5 to 7, and chroma of 0 or 1. It has common mottles of light yellowish brown, strong brown, or brownish yellow.

Riverview series

The Riverview series consists of deep, well drained, moderately permeable soils that formed in loamy sediment from the Southern Piedmont uplands. These nearly level soils are on alluvial plains along the Savannah River. Depth to the seasonal water table commonly is 3 to 5 feet in winter and early in spring. The slope is less than 2 percent.

Riverview soils are geographically associated with Chewacla and Chastain soils. Chewacla soils are

somewhat poorly drained and commonly are on the lower lying flood plains away from the stream channel. Chastain soils are on the lower lying flood plains, are poorly drained, and have a clayey control section.

Typical pedon of Riverview silt loam in a cultivated field 0.9 mile north of Butler Creek on levee road, 600 feet east of road:

Ap—0 to 7 inches; dark brown (7.5YR 4/2) silt loam; weak fine granular structure; very friable; many very fine roots; common very fine flakes of mica; medium acid; clear smooth boundary.

B21—7 to 25 inches; reddish brown (5YR 4/4) loam; moderate medium subangular blocky structure; friable; common fine roots; common fine flakes of mica; strongly acid; gradual smooth boundary.

B22—25 to 33 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; common very fine roots; common fine flakes of mica; strongly acid; clear smooth boundary.

C1—33 to 62 inches; dark brown (10YR 4/3) loamy fine sand; common medium distinct pale brown (10YR 6/3) mottles; weak medium granular structure; very friable; many fine flakes of mica; strongly acid; gradual wavy boundary.

C2—62 to 65 inches; brown (10YR 5/3) fine sand; single grained; loose; many fine flakes of mica; strongly acid.

Solum thickness is 30 to 38 inches. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 6 to 12 inches thick. It has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 or 4.

The B horizon has hue of 10YR, 7.5YR, or 5YR; value of 3 or 4; and chroma of 4. This horizon is silty clay loam, silt loam, or loam.

The C horizon is fine sandy loam, loamy fine sand, sand, or coarse sand.

Roanoke series

The Roanoke series consists of deep, poorly drained, slowly permeable soils that formed in stratified loamy and clayey sediment. These nearly level soils are mainly on stream terraces slightly downstream from the Southern Piedmont uplands. The water table is less than 1 foot from the surface in winter and spring. The slope is 0 to 2 percent.

Roanoke soils are geographically associated with Altavista, Dogue, and Wickham soils. The moderately well drained Altavista soils and well drained Wickham soils are in a fine-loamy family. Dogue soils are moderately well drained.

Typical pedon of Roanoke loam in a wooded area 0.4 mile north of Tobacco Road on Georgia Highway 56 spur, 900 feet west of highway:

A1—0 to 5 inches; dark gray (10YR 4/1) loam; weak fine granular structure; friable; many very fine and fine roots; strongly acid; clear wavy boundary.

B1g—5 to 8 inches; dark gray (10YR 4/1) clay loam; weak medium subangular blocky structure; friable; common fine roots; few fine pores; strongly acid; clear wavy boundary.

B21tg—8 to 32 inches; gray (10YR 5/1) clay; few fine prominent strong brown (7.5YR 5/6) and red (10R 5/8) mottles; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; few fine and medium roots; common very fine and fine pores; strongly acid; gradual wavy boundary.

B22tg—32 to 48 inches; gray (10YR 5/1) clay; common medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; thin discontinuous clay films on faces of peds; few medium roots; few very fine flakes of mica; few very fine roots; strongly acid; gradual wavy boundary.

B3g—48 to 70 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/8), and yellowish red sandy clay loam; weak medium subangular blocky structure; friable; common patchy clay films; common very fine and fine flakes of mica; very strongly acid; gradual wavy boundary.

C—70 to 96 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) sandy loam; massive; friable; common very fine and fine flakes of mica; very strongly acid.

Solum thickness is 61 to 70 inches. Depth to bedrock is 7 feet or more. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 4 or 5 inches thick. It has hue of 10YR, value of 3 to 6, and chroma of 1 or 2.

Some pedons have a dark gray B1g horizon that commonly has few or common mottles of medium red.

In some pedons the Btg horizon has neutral colors. In others it has hue of 10YR, value of 4 to 6, and chroma of 1. In some pedons it has few or common mottles of yellow, brown, or red.

The B3 horizon is mottled in hue of 10YR to 5Y, value of 5 to 7, and chroma of 8 or less. It is sandy clay loam or sandy clay.

The C horizon is mottled in hue of 10YR to 5YR, value of 5 to 7, and chroma of 1 to 4, 6, or 8. It ranges from sandy loam to clay.

Troup series

The Troup series consists of deep, well drained soils that have a moderately permeable subsoil. These soils formed in thick sandy and loamy marine sediment. They are on upland ridgetops and hillsides of the Southern Coastal Plain. Slopes range from 1 to 17 percent but are dominantly 1 to 8 percent.

Troup soils are geographically associated with Dothan, Lakeland, Lucy, and Orangeburg soils. Dothan and Orangeburg soils have an A horizon that is less than 20 inches thick. Lakeland soils do not have a Bt horizon within 80 inches of the surface. Lucy soils are sandy to a depth of 20 to 40 inches.

Typical pedon of Troup sand, 1 to 5 percent slopes, in a wooded area 2 miles east of Hephzibah Church on the Hephzibah-McBean Road, 300 feet south of road:

A1—0 to 7 inches; dark grayish brown (10YR 4/2) fine sand; weak fine granular structure; very friable; many very fine and medium roots; very strongly acid; clear wavy boundary.
A21—7 to 31 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few very fine and medium roots; very strongly acid; gradual wavy boundary.
A22—31 to 54 inches; yellowish brown (10YR 5/8) fine sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.
B1—54 to 64 inches; strong brown (7.5YR 5/8) sandy loam; common medium distinct red (2.5YR 4/8) mottles; weak medium subangular blocky structure; very friable; strongly acid; clear wavy boundary.
B21t—64 to 80 inches; red (2.5YR 4/8) sandy clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; very strongly acid.

Solum thickness is 76 to 120 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon is 41 to 69 inches thick. The A1 horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4 or 6. The A2 horizon has hue of 5YR to 10YR, value of 4 or 6, and chroma of 4, 6, or 8.

The B1 horizon has hue of 10YR, 7.5YR, or 2.5YR; value of 4 to 6; and chroma of 6 or 8. Some pedons have few or common fine or medium mottles of yellowish red or red.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 6 or 8. In some pedons it has few to many fine or medium mottles of red and brown. Texture is sandy loam or sandy clay loam.

Vaucluse series

The Vaucluse series consists of deep, well drained, slowly permeable soils that formed in sandy and loamy marine sediment. These soils are on upland ridgetops and hillsides of the Sand Hills and Southern Coastal Plain. Slopes are dominantly about 8 percent but range from 5 to 17 percent.

Vaucluse soils are geographically associated with Ailey, Fuquay, Lakeland, and Troup soils. Ailey and Fuquay soils have a sandy surface layer 20 to 40 inches thick. They have a horizon within a depth of 60 inches that is more that 5 percent plinthite. Lakeland soils are sandy throughout. Troup soils do not have a fragipan and have a sandy surface layer 40 to 80 inches thick.

Typical pedon of Vaucluse loamy sand in an area of Vaucluse-Ailey complex, 5 to 8 percent slopes, in a wooded area 0.3 mile east on Wills Foreman Road from the intersection with U.S. Highway No. 1:

A1—0 to 8 inches; dark brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine roots; few nodules of ironstone; strongly acid; abrupt smooth boundary.
B2t—8 to 20 inches; strong brown (7.5YR 5/6) sandy clay loam; few medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; thin patchy clay films on faces of peds; friable; common fine roots; strongly acid; clear wavy boundary.
Bx1—20 to 35 inches; yellowish red (5YR 5/8) sandy clay loam; common medium prominent yellowish brown (10YR 5/8), common medium distinct red (2.5YR 4/8), and few fine prominent pale brown mottles; moderate medium platy structure parting to angular blocky; firm and brittle; few very fine roots between peds; few patchy clay films on horizontal faces of peds; very strongly acid; gradual wavy boundary.
Bx2—35 to 60 inches; yellowish red (5YR 5/8) sandy clay loam; common medium prominent yellowish brown (10YR 5/8) and pale brown (10YR 6/3) mottles; massive or weak moderate subangular blocky structure; brittle; few very fine roots between peds; vertical and horizontal fractures 1 to 3 feet apart; very strongly acid.

Solum thickness is 37 to 63 inches or more. The soil is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Nodules of ironstone range from few to common in the A horizon. Some pedons have few or common nodules in the B horizon. Depth to the brittle horizon ranges from 14 to 36 inches. Pebbles commonly are on the surface and throughout the soil.

The A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Some pedons have an A2 horizon. This horizon is commonly loamy sand and has hue of 10YR, value of 5, and chroma of 3 or 4.

Some pedons have a B1 horizon. This horizon is sandy loam. Hue is 5YR to 10YR, value is 5, and chroma is 4, 6, or 8.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4, 6, or 8.

The Bx horizon commonly is mottled in hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 1 to 4, 6, or 8.

Wedowee series

The Wedowee series consists of deep, well drained, moderately permeable soils formed in material

weathered from phyllite and slate. These soils are on upland ridgetops and hillsides of the Southern Piedmont. The slope range is 6 to 15 percent.

Wedowee soils are geographically associated with Georgeville, Grover, and Goldston soils. Georgeville soils have a thicker solum and a redder subsoil than Wedowee soils. Grover soils have a subsoil that is more micaceous and less clayey. Goldston soils have a thinner solum and less clay in the subsoil.

Typical pedon of Wedowee fine sandy loam, 10 to 15 percent slopes, in a wooded area 300 feet south of West Lake Road on Heather Street, 50 feet north; 600 feet southeast of Aumond Lake:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots; many medium pebbles of quartz and slate; strongly acid; clear wavy boundary.

B1—4 to 7 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; common very fine and fine roots; strongly acid; clear smooth boundary.

B2t—7 to 25 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; few fine roots; thin discontinuous clay films on faces of peds; strongly acid; gradual wavy boundary.

B3—25 to 35 inches; yellowish red (5YR 5/6) clay loam; common medium prominent pale yellow (2.5Y 8/4) mottles; weak medium subangular blocky structure; friable; common light yellowish brown (2.5Y 6/4) rock fragments; thin discontinuous clay films on faces of peds; strongly acid; gradual wavy boundary.

C—35 to 45 inches; strong brown (7.5YR 5/8) and very pale brown (10YR 8/4) sandy clay loam that has many fragments of highly weathered phyllite and shale; massive; friable; strongly acid.

Solum thickness is 26 to 40 inches. The soil is very strongly acid or strongly acid throughout except for the surface layer in limed areas.

The A horizon is 3 to 9 inches thick. It has hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 2 to 4.

The B1 horizon has hue of 5YR, 7.5YR, or 10YR, value of 5 to 7, and chroma of 6 or 8. It has few or common mottles with hue of 7.5YR or 5YR, value of 5 or 6, and chroma of 4 or 6.

The Bt horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Some pedons have mottles of 2.5YR, 5YR, 7.5YR, and 10YR hue, 4 to 6 value, and 4 or 6 chroma. They range from few to many.

The B3 horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Some pedons are mottled in hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 3, 4, 6, or 8.

The C horizon is weathered slate or phyllite. When crushed, it is sandy loam, sandy clay, clay loam, or sandy clay loam.

Wickham series

The Wickham series consists of deep, well drained, moderately permeable soils that formed in loamy sediment. These soils are in small areas on stream terraces just above the flood plains of the larger streams. The slope range is 2 to 6 percent.

Wickham soils are geographically associated with Altavista, Dogue, and Georgeville soils. Altavista and Dogue soils are on the same landscape but are moderately well drained. Dogue soils are in a clayey family. Georgeville soils are on uplands and have a clayey Bt horizon.

Typical pedon of Wickham fine sandy loam in an area of Wickham-Urban land complex, 2 to 6 percent slopes, in an idle area 600 feet north of Dixon Airline road on Georgia Highway 56 spur, 100 feet west of highway:

Ap—0 to 8 inches; dark brown (7.5YR 3/2) fine sandy loam; weak medium granular structure; very friable; many very fine roots; strongly acid; clear smooth boundary.

B1—8 to 14 inches; dark red (2.5YR 3/6) sandy clay loam; common medium distinct dark reddish gray (5YR 4/2) mottles; weak medium granular structure; friable; common very fine and fine roots; strongly acid; gradual smooth boundary.

B21t—14 to 30 inches; dark red (2.5YR 3/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few thin patchy clay films on faces of peds; few medium black nodules; strongly acid; gradual wavy boundary.

B22t—30 to 46 inches; dark red (2.5YR 3/6) clay loam; moderate medium subangular blocky structure; firm; many thin patchy clay films; few medium black nodules; few fine roots; strongly acid; gradual wavy boundary.

B23t—46 to 55 inches; red (2.5YR 4/8) clay loam; few medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; many patchy clay films on faces of peds; few medium black nodules; strongly acid; gradual wavy boundary.

B3—55 to 60 inches; red (2.5YR 4/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium granular structure; friable; few fine flakes of mica; few patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

C—60 to 78 inches; red (2.5YR 4/8) coarse sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles; massive; friable; common very fine flakes of mica; very strongly acid.

Solum thickness is 50 to 70 inches or more. Depth to bedrock is 6 to 10 feet or more. The soil is strongly acid or medium acid throughout except for the surface layer in limed areas. The color of the B and C horizons changes more than 1 unit from moist to dry soil.

The Ap horizon is 6 to 8 inches thick. It has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR, value of 3, and chroma of 6 or 8. It is sandy clay loam or clay loam.

The B3 horizon has hue of 2.5YR, value of 4, and chroma of 6 or 8. It is sandy loam or sandy clay loam. In some pedons it has common medium mottles of strong brown.

formation of the soils

Soil forms when parent material, plants and animals, climate, and topography, or relief, interact for a long time (*5*). This combination of factors largely determines the properties of the soil at any given point on the earth.

Climate and vegetation are the principal active forces that gradually alter the parent material to form a soil. Topography influences drainage, runoff, and soil temperature. Over long periods, therefore, the climate, vegetation, and topography bring about changes in the parent material. Each of the five factors of soil formation are discussed in the paragraphs that follow.

parent material

Parent material, the unconsolidated mass in which soil forms, is largely responsible for the chemical and mineral composition of a soil. According to the 1976 Geologic Map of Georgia (*4*), only about 3 percent of the county, the Piedmont area, is underlain by crystalline rock. The rest is underlain by sedimentary deposits of the Coastal Plain.

The Piedmont area is underlain by phyllitic or closely related rocks, mainly slate. The parent material of Georgeville, Goldston, and Wedowee soils weathered from these rocks. Both the parent material and the soils have a medium content of silt. These soils are low in base saturation and have mainly kaolinitic mineralogy.

Several areas are underlain by mica gneiss and mica schist. This rock has weathered to parent material that is high in content of mica. Grover soils, which are micaceous throughout, formed in this kind of parent material. They are low in base saturation and have micaceous mineralogy.

One very small area in the Piedmont is underlain by dark colored basic rocks—diorite, gabbro, and hornblende schist. Material weathered from these rocks is the parent material of Mecklenburg soils. Mecklenburg soils are high in base saturation and have mixed mineralogy.

The Coastal Plain is underlain by sedimentary deposits classified as Lower Tertiary Cretaceous Undifferentiated, Twiggs Clay, and Irwinton Sand. This marine sediment commonly is stratified and weakly consolidated.

The excessively drained Lakeland soils and well drained Ailey, Troup, and Vaucluse soils, on uplands, formed in material of the Lower Tertiary Cretaceous Undifferentiated and the Twiggs Clay Formations. Most of these soils are deep sands. The Ailey and Vaucluse soils, however, have a subsoil that is loamy and mostly firm and brittle. All are low in base saturation and have mainly siliceous mineralogy.

The well drained Dothan, Faceville, Fuquay, Lucy, and Orangeburg soils, on uplands, formed in material of the Irwinton Sand Formation. They are low in base saturation and have mainly siliceous mineralogy.

The well drained Wickham soils, the moderately well drained Altavista, Dogue, and Goldsboro soils, and the poorly drained Rains and Roanoke soils formed mainly in undifferentiated terrace deposits. The well drained Riverview soils, the somewhat poorly drained Chewacla soils, and the poorly drained Bibb, Chastain, and Osier soils formed in stream alluvium. All are low in base saturation and have dominantly mixed or siliceous mineralogy.

relief

Relief is defined as the elevations or inequalities of a land surface considered collectively (*5*). Color of the soil, thickness of the solum, wetness, soil temperature, erosion, thickness and content of organic matter of the A horizon, and plant cover are commonly influenced by relief.

In Richmond County, thickness of the solum and wetness of the soil are obviously related to relief. Georgeville soils, which are on broad, gentle ridgetops, have a thicker solum than Wedowee soils, which are on the steeper, more undulating hillsides. The difference in solum thickness can be attributed to the slow geologic erosion on gently sloping soils and to the rapid geologic erosion on steep soils.

Because the movement of water across the surface and through the soil profile is controlled to a large extent by relief, the degree of soil wetness is related to relief. In the higher sloping areas, where runoff is more rapid and less water enters the soil, the soils are drier. As a result of runoff and the lateral movement of water through the soil, lower lying soils are commonly wetter. The well drained Orangeburg soils on uplands characteristically are red and have few, if any, mottles. The poorly drained

Roanoke soils in slightly concave areas on stream terraces have a seasonally high water table, are characteristically gray throughout, and are mottled.

plants and animals

The role of plants and animals is significant in soil development, but the direct impact of each is difficult to measure. Some of the changes caused by plants and animals are gains in organic matter and nitrogen, gains or losses of plant nutrients, and changes in structure and porosity.

The soils of Richmond County formed under a succession of plants. Deciduous forest, the climax vegetation, has contributed significantly to the recycling of plant nutrients and the accumulation of organic matter and has provided energy for animal life. Plants provide cover that reduces erosion. They stabilize the surface of the soil, enabling the soil-forming processes to continue. Plants also provide a more stable environment for the soil-forming processes because they reduce the extremes in temperature that unprotected soils are subjected to.

Animal life in the soils is abundant under the present vegetation and environment. Ants, bees, wasps, earthworms, and spiders make channels in the soil, and rodents, moles, crustacea, reptiles, and foxes make burrows, thus mixing the upper horizons of the soil. Bacteria, fungi, and other micro-organisms hasten decomposition of organic matter and increase the release of minerals for additional plant growth. Man affects the soil-forming process by tilling the soils, smoothing hills, filling valleys, and reducing or increasing fertility.

The net gains and losses caused by plants and animals in the soil-forming process are important in Richmond County. Within the relatively small confines of the survey area, however, one soil does not significantly differ from another soil because of plants and animals.

climate

The two most important measured features of climate that affect soil properties are rainfall and temperature. Water is essential in the formation of soil. Water dissolves soluble materials and is used by plants and animals. It transports material from one part of the soil to another and from one area to another. These processes and chemical reactions depend to some extent on temperature. Temperature affects the type and quantity of vegetation, the amount and kind of organic matter, and the rate of decomposition of organic matter.

The climate of Richmond County is warm and moist—probably similar to the climate that existed when the soils were forming. Soils in Richmond County formed under a thermic temperature regime. The soil temperature at a depth of 20 inches averages about 68 to 70 degrees annually. The high rainfall and warm temperature contribute to rapid soil formation. Rainfall and temperature are uniform throughout the survey area.

time

The length of time that the soil-forming factors act on the parent material determines to a large degree the characteristics of the soil. Soils in Richmond County are generally classified as either young or mature. Young soils do not have pedogenic horizons; they show an irregular decrease in content of organic carbon with increasing depth. Mature soils are in equilibrium with the environment. They have readily recognizable pedogenic horizons; they show a regular decrease in content of organic carbon with increasing depth.

Bibb and Osier soils are on flood plains that annually receive new sediment from floodwaters. They are stratified. They are not old enough to have a zone of illuviation. Dothan, Faceville, Georgeville, and Orangeburg soils commonly are on broad stable upland landscapes where the soil-forming processes have been active for thousands of years. These soils have a thick solum and a highly developed zone of illuviation.

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glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour farming. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively

drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Fast intake (in tables). The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that

water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the

material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," of the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.
Water table, apparent. —A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.
Water table, perched. —A water table standing above an unsaturated zone. In places an upper, or perched water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-77 at Augusta, Georgia]

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days[1]	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	57.1	33.4	45.3	79	12	84	3.87	2.16	5.27	7	.2
February---	60.7	35.5	48.1	79	15	88	4.05	2.14	5.60	7	.8
March------	67.7	42.1	54.9	86	23	205	4.80	2.89	6.51	7	.0
April------	76.8	49.6	63.2	91	31	396	3.31	1.71	4.61	5	.0
May--------	83.9	58.3	71.1	96	39	654	3.64	1.88	5.07	7	.0
June-------	89.1	65.7	77.4	100	50	822	4.03	2.78	5.17	7	.0
July-------	91.3	69.5	80.4	101	59	942	4.52	2.38	6.26	8	.0
August-----	90.7	68.9	79.8	100	58	924	4.09	2.15	5.66	6	.0
September--	85.6	63.3	74.5	97	46	735	3.51	1.48	5.15	6	.0
October----	77.0	50.3	63.7	91	29	425	2.09	.36	3.42	4	.0
November---	67.4	40.0	53.7	85	21	149	2.06	.74	3.10	4	.0
December---	59.2	34.7	47.0	80	14	81	3.40	1.87	4.65	6	.0
Yearly:											
Average--	75.5	50.9	63.3	---	---	---	---	---	---	---	---
Extreme--	---	---	---	103	10	---	---	---	---	---	---
Total----	---	---	---	---	---	5,505	43.37	36.88	49.59	74	1.0

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-77 at Augusta, Georgia]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 17	March 26	April 17
2 years in 10 later than--	March 10	March 20	April 10
5 years in 10 later than--	February 25	March 9	March 29
First freezing temperature in fall:			
1 year in 10 earlier than--	November 7	October 28	October 23
2 years in 10 earlier than--	November 14	November 2	October 27
5 years in 10 earlier than--	November 28	November 11	November 5

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-77 at Augusta, Georgia]

Probability	Daily minimum temperature		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	246	228	198
8 years in 10	256	235	206
5 years in 10	275	246	220
2 years in 10	294	258	235
1 year in 10	304	265	242

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AgB	Ailey loamy sand, 2 to 5 percent slopes	1,130	0.5
AgC	Ailey loamy sand, 5 to 8 percent slopes	4,030	1.9
AgD	Ailey loamy sand, 8 to 12 percent slopes	2,200	1.1
Av	Altavista sandy loam, 0 to 2 percent slopes	1,035	0.5
BO	Bibb and Osier soils	15,267	7.3
Ca	Chastain loam	2,200	1.1
CC	Chewacla-Chastain association	4,280	2.1
CR	Chewacla-Riverview association	6,590	3.2
DgA	Dogue fine sandy loam, 0 to 3 percent slopes	4,280	2.1
DhA	Dogue-Urban land complex, 0 to 3 percent slopes	1,885	0.9
DoA	Dothan loamy sand, 0 to 2 percent slopes	830	0.4
DoB	Dothan loamy sand, 2 to 5 percent slopes	4,940	2.4
DuB	Dothan-Urban land complex, 0 to 5 percent slopes	495	0.2
FeA	Faceville sandy loam, 0 to 2 percent slopes	160	0.1
FeB	Faceville sandy loam, 2 to 5 percent slopes	1,155	0.6
FeC	Faceville sandy loam, 5 to 8 percent slopes	440	0.2
FsB	Fuquay loamy sand, 1 to 5 percent slopes	4,255	2.1
FuC	Fuquay-Urban land complex, 2 to 8 percent slopes	3,760	1.8
GgB	Georgeville loam, 2 to 6 percent slopes	285	0.1
GgC	Georgeville loam, 6 to 10 percent slopes	305	0.1
GhC	Georgeville-Urban land complex, 2 to 8 percent slopes	2,415	1.2
GmA	Goldsboro sandy loam	690	0.3
GnA	Goldsboro-Urban land complex	2,100	1.0
GoE	Goldston slaty silt loam, 10 to 25 percent slopes	60	*
Gr	Grady loam	415	0.2
GvB	Grover sandy loam, 2 to 6 percent slopes	355	0.2
GvC	Grover sandy loam, 6 to 10 percent slopes	105	0.1
HZ	Hydraquents, mucky	1,195	0.6
LkB	Lakeland sand, 2 to 5 percent slopes	12,280	5.9
LkC	Lakeland sand, 5 to 10 percent slopes	1,705	0.8
LkD	Lakeland sand, 10 to 17 percent slopes	2,235	1.1
LmB	Lucy loamy sand, 1 to 5 percent slopes	4,945	2.4
LmC	Lucy loamy sand, 5 to 8 percent slopes	2,760	1.3
LmD	Lucy loamy sand, 8 to 15 percent slopes	2,705	1.3
MkB	Mecklenburg loam, 2 to 6 percent slopes	30	*
OeA	Orangeburg loamy sand, 0 to 2 percent slopes	805	0.4
OeB	Orangeburg loamy sand, 2 to 5 percent slopes	6,635	3.2
OeD	Orangeburg loamy sand, 8 to 15 percent slopes	2,805	1.4
OsC	Orangeburg sandy loam, 5 to 8 percent slopes	3,580	1.7
Pm	Pits, mines	810	0.4
Ra	Rains loamy sand	1,950	0.9
Rh	Rains-Urban land complex	450	0.2
Ro	Riverview silt loam	5,510	2.7
Rp	Riverview-Urban land complex	990	0.5
Rr	Roanoke loam	1,980	1.0
TwB	Troup fine sand, 1 to 5 percent slopes	30,270	14.6
TwC	Troup fine sand, 5 to 10 percent slopes	10,040	4.9
TwD	Troup fine sand, 10 to 17 percent slopes	10,065	4.9
TxC	Troup-Urban land complex, 1 to 8 percent slopes	6,600	3.2
UaA	Udorthents, 0 to 2 percent slopes	660	0.3
Uc	Udorthents, sandy and loamy	1,980	1.0
Ud	Urban land	3,250	1.6
VaC	Vaucluse-Ailey complex, 5 to 8 percent slopes	9,810	4.7
VaD	Vaucluse-Ailey complex, 8 to 17 percent slopes	7,215	3.5
VuC	Vaucluse-Urban land complex, 5 to 8 percent slopes	2,130	1.0
VuD	Vaucluse-Urban land complex, 8 to 17 percent slopes	210	0.1
WeC	Wedowee fine sandy loam, 6 to 10 percent slopes	460	0.2
WeD	Wedowee fine sandy loam, 10 to 15 percent slopes	320	0.2
WuC	Wedowee-Urban land complex, 6 to 10 percent slopes	710	0.3
WuD	Wedowee-Urban land complex, 10 to 15 percent slopes	215	0.1
WvB	Wickham-Urban land complex, 2 to 6 percent slopes	935	0.5
	Water	3,010	1.5
	Total	206,912	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Corn	Soybeans	Cotton lint	Bahiagrass	Improved bermudagrass
	Bu	Bu	Lb	AUM*	AUM*
AgB---- Ailey	50	20	400	6.0	6.0
AgC---- Ailey	45	18	350	5.0	5.0
AgD---- Ailey	---	---	---	5.0	5.0
Av---- Altavista	110	35	550	8.0	9.5
CC: Chewacla----	100	35	---	8.0	9.0
Chastain----	---	---	---	---	---
CR: Chewacla----	100	35	---	8.0	9.0
Riverview----	80	30	---	8.0	8.0
DgA---- Dogue	105	35	---	8.0	9.5
DoA---- Dothan	120	40	900	9.0	10.5
DoB---- Dothan	120	35	900	9.0	10.5
FeA---- Faceville	115	40	875	7.0	10.0
FeB---- Faceville	115	45	875	7.0	10.0
FeC---- Faceville	90	45	650	6.0	9.5
FsB---- Fuquay	80	30	650	7.5	7.5
GgB---- Georgeville	90	35	700	---	---
GgC---- Georgeville	80	33	625	---	---
GmA---- Goldsboro	125	45	700	8.5	10.5
GvB---- Grover	90	45	700	---	---
GvC---- Grover	80	40	600	---	---
LkB---- Lakeland	55	20	---	7.0	7.0
LkC---- Lakeland	---	---	---	6.5	6.5

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn	Soybeans	Cotton lint	Bahiagrass	Improved bermudagrass
	Bu	Bu	Lb	AUM*	AUM*
LkD---------- Lakeland	---	---	---	6.0	6.0
LmB---------- Lucy	80	33	650	8.5	8.0
LmC---------- Lucy	70	25	600	8.5	7.5
LmD---------- Lucy	---	---	---	7.5	7.0
MkB---------- Mecklenburg	90	40	550	---	---
OeA---------- Orangeburg	120	45	900	8.5	10.5
OeB---------- Orangeburg	120	40	900	8.5	10.5
OeD---------- Orangeburg	85	30	650	7.0	9.0
OsC---------- Orangeburg	95	35	800	8.0	10.0
Ro---------- Riverview	80	30	---	8.0	8.0
TwB---------- Troup	60	25	500	7.2	7.5
TwC---------- Troup	55	22	450	7.0	7.3
TwD---------- Troup	---	---	---	5.0	6.0
VaC---------- Vaucluse	49	20	385	5.6	6.6
VaD---------- Vaucluse	---	---	---	5.6	6.6
WeC---------- Wedowee	75	25	450	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	1,795	---	---	---	---
II	46,695	17,245	16,490	12,960	---
III	57,230	5,600	10,870	40,760	---
IV	46,735	15,280	2,400	29,055	---
V	17,662	---	17,662	---	---
VI	21,455	7,425	2,200	11,830	---
VII	4,435	2,200	---	2,235	---
VIII	1,195	---	1,195	---	---

TABLE 7.--LANDSCAPE PLANTS ADAPTED TO WET SOILS AND DRY SOILS

[All the soils not listed, except Hydraquents, are suited to all the plants in the table. Hydraquents are poorly suited to landscaping]

Soil group and map symbols	Deciduous trees	Deciduous shrubs and vines	Broadleaf evergreen trees, shrubs, and vines	Ground cover	Narrowleaf evergreens
Soils that have a seasonal high water table in winter and spring: BO; Ca; CC; Gr; Ra; Rh; Rr.*	American elm, baldcypress, Japanese zelcova, pin oak, red maple, river birch, sweetbay magnolia, sweetgum, sugar hackberry, tuliptree, water oak, weeping willow, willow oak.	Oakleaf hydrangea, Virginia creeper.	American holly, bamboo, Carolina laurelcherry, Carolina yellow jessamine, evergreen euonymous, gallberry, Japanese fatsia, live oak, oleander, osmanthus, pampasgrass, silverberry, southern magnolia, southern waxmyrtle, thorny elaeagnus, waxleaf ligustrum, yaupon holly.	English ivy, liriope, monkey grass, vinca.	Spruce, pine.
Soils that have low available water capacity and are droughty: AgB, AgC, AgD; FsB, Fuc; Goe; LkB, LkC, LkD; LmB, LmC, LmD; TwB; TwC, TwD, TxC.	American elm, baldcypress, Chinese chestnut, Chinese elm, Chinese pistache, common persimmon, eastern redbud, flowering crab-apple, goldenrain tree, honey-locust, Japanese zelcova, pecan, pin oak, Siberian elm, southern catalpa, water oak, willow oak.	Carolina yellow jessamine, Chinese redbud, crape-myrtle, flowering quince, goldenbell, pomegranate, spirea, Virginia creeper, winter creeper, winter jasmine, wisteria.	Barberry, Carolina laurelcherry, common boxwood, elaeagnus, evergreen euonymous, Frazier's photinia, glossy abelia, Japanese boxwood, ligustrum, live oak, nandina, oleander, pampasgrass, pittosporum, pricklypear, pyracantha, yaupon holly, yucca.	Goldmoss stonecrop, liriope, rosemary, santolina.	Japgarden juniper, podocarpus, shore juniper.

* The soils that have a seasonal high water table are subject to overflow unless protected. The frequency and duration of flooding differs. See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
AgB, AgC, AgD---- Ailey	4s	Slight	Moderate	Moderate	Slash pine----------	70	Slash pine, longleaf pine.
					Longleaf pine--------	60	
Av---------- Altavista	2w	Slight	Moderate	Slight	Loblolly pine--------	91	Loblolly pine, yellow-poplar, black walnut, sweetgum, American sycamore, cherrybark oak.
					Longleaf pine--------	84	
					Shortleaf pine-------	77	
					Sweetgum------------	84	
					White oak-----------	75	
BO:* Bibb----------	2w	Slight	Severe	Severe	Loblolly pine--------	95	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
					Sweetgum------------	90	
					Water oak-----------	90	
Osier----------	3w	Slight	Severe	Severe	Slash pine----------	85	Slash pine, loblolly pine.
					Loblolly pine--------	87	
					Longleaf pine--------	68	
Ca---------- Chastain	2w	Slight	Severe	Severe	Sweetgum------------	94	Loblolly pine, American sycamore, sweetgum, cherrybark oak.
					Water oak-----------	89	
					Eastern cottonwood---	90	
					Green ash-----------	88	
					Loblolly pine--------	90	
					Water tupelo---------	---	
					White oak-----------	---	
					Southern red oak-----	---	
					Baldcypress----------	---	
CC:* Chewacla----------	1w	Slight	Moderate	Moderate	Loblolly pine--------	96	Loblolly pine, slash pine, American sycamore, yellow-poplar, sweetgum, eastern white pine, green ash.
					Yellow-poplar--------	104	
					American sycamore----	90	
					Sweetgum------------	97	
					Water oak-----------	86	
					Eastern cottonwood---	100	
					Green ash-----------	97	
					Southern red oak-----	90	
Chastain----------	2w	Slight	Severe	Severe	Sweetgum------------	94	Loblolly pine, American sycamore, sweetgum, cherrybark oak.
					Water oak-----------	89	
					Eastern cottonwood---	90	
					Green ash-----------	88	
					Loblolly pine--------	90	
					Water tupelo---------	---	
					White oak-----------	---	
					Southern red oak-----	---	
					Baldcypress----------	---	
CR:* Chewacla----------	1w	Slight	Moderate	Moderate	Loblolly pine--------	96	Loblolly pine, slash pine, American sycamore, yellow-poplar, sweetgum, eastern white pine, green ash.
					Yellow-poplar--------	104	
					American sycamore----	90	
					Sweetgum------------	97	
					Water oak-----------	86	
					Eastern cottonwood---	100	
					Green ash-----------	97	
					Southern red oak-----	90	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
CR:*							
Riverview	1o	Slight	Moderate	Moderate	Yellow-poplar	120	Loblolly pine, slash pine, eastern cottonwood, sweetgum, yellow-poplar, American sycamore.
					Loblolly pine	100	
					Sweetgum	110	
DgA	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine.
Dogue					Northern red oak	80	
					Sweetgum	90	
					Yellow-poplar	90	
					Southern red oak	80	
DoA, DoB	2o	Slight	Slight	Slight	Slash pine	89	Slash pine, loblolly pine, longleaf pine.
Dothan					Longleaf pine	78	
					Loblolly pine	90	
FeA, FeB, FeC	3o	Slight	Slight	Slight	Loblolly pine	82	Loblolly pine, slash pine.
Faceville					Slash pine	80	
					Longleaf pine	65	
FsB	3s	Slight	Moderate	Moderate	Loblolly pine	83	Slash pine, longleaf pine.
Fuquay					Slash pine	92	
					Longleaf pine	76	
GgB, GgC	3o	Slight	Slight	Slight	Loblolly pine	81	Loblolly pine, Virginia pine, eastern redcedar, black walnut, yellow-poplar.
Georgeville					Longleaf pine	67	
					Shortleaf pine	66	
					White oak	69	
					Scarlet oak	70	
					Southern red oak	67	
GmA	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, slash pine, yellow-poplar, American sycamore, sweetgum.
Goldsboro					Slash pine	93	
					Longleaf pine	77	
					Sweetgum	90	
					Southern red oak	---	
					White oak	---	
GoE	4r	Moderate	Moderate	Slight	Loblolly pine	78	Eastern redcedar, loblolly pine, slash pine, Virginia pine.
Goldston					Longleaf pine	68	
					Shortleaf pine	63	
					Southern red oak	66	
					White oak	69	
Gr	2w	Slight	Severe	Severe	Loblolly pine	90	Loblolly pine, slash pine, American sycamore, water tupelo.
Grady					Slash pine	88	
					Sweetgum	90	
GvB, GvC	3o	Slight	Slight	Slight	Loblolly pine	80	Loblolly pine, slash pine, Virginia pine.
Grover					White oak	---	
					Southern red oak	---	
LkB, LkC, LkD	4s	Slight	Moderate	Moderate	Slash pine	77	Slash pine, loblolly pine.
Lakeland					Loblolly pine	75	
					Longleaf pine	60	
LmB, LmC, LmD	3s	Slight	Moderate	Moderate	Slash pine	92	Slash pine, longleaf pine, loblolly pine.
Lucy					Longleaf pine	74	
					Loblolly pine	86	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
MkB---------- Mecklenburg	4o	Slight	Slight	Slight	Loblolly pine--------	75	Loblolly pine, Virginia pine, yellow-poplar, slash pine, eastern redcedar.
					Shortleaf pine-------	70	
					Southern red oak-----	75	
					Sweetgum------------	82	
					White oak-----------	71	
					Yellow-poplar--------	89	
					Eastern redcedar-----	---	
OeA, OeB, OeD, OsC- Orangeburg	2o	Slight	Slight	Slight	Loblolly pine--------	86	Slash pine, loblolly pine.
					Slash pine-----------	86	
					Longleaf pine--------	70	
Ra---------- Rains	2w	Slight	Severe	Severe	Loblolly pine--------	94	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine-----------	91	
					Sweetgum------------	90	
Ro---------- Riverview	1o	Slight	Moderate	Moderate	Yellow-poplar--------	120	Loblolly pine, slash pine, eastern cottonwood, sweetgum, yellow-poplar, American sycamore.
					Loblolly pine--------	100	
					Sweetgum------------	110	
Rr---------- Roanoke	2w	Slight	Severe	Severe	American sycamore----	---	Loblolly pine.
					Loblolly pine--------	85	
					Sweetgum------------	82	
TwB, TwC, TwD------ Troup	3s	Slight	Moderate	Moderate	Loblolly pine--------	82	Loblolly pine, longleaf pine, slash pine.
					Longleaf pine--------	75	
					Slash pine-----------	84	
VaC,* VaD:* Vaucluse----------	3o	Slight	Slight	Slight	Loblolly pine--------	76	Loblolly pine, slash pine.
Ailey----------	4s	Slight	Moderate	Moderate	Slash pine-----------	70	Slash pine, longleaf pine.
					Longleaf pine--------	60	
WeC, WeD---------- Wedowee	3o	Slight	Slight	Slight	Longleaf pine--------	71	Loblolly pine, Virginia pine, eastern redcedar, yellow-poplar.
					Loblolly pine--------	80	
					Shortleaf pine-------	70	
					Southern red oak-----	70	
					Northern red oak-----	70	
					White oak-----------	65	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight" "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AgB Ailey	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
AgC, AgD Ailey	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
Av Altavista	Severe: floods.	Slight	Moderate: wetness, floods.	Slight	Moderate: wetness, floods.
BO:*					
Bibb	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Osier	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Ca Chastain	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.
CC:*					
Chewacla	Severe: floods, wetness.	Moderate: wetness, floods.	Severe: wetness, floods.	Moderate: wetness, floods.	Severe: floods, wetness.
Chastain	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.
CR:*					
Chewacla	Severe: floods, wetness.	Moderate: wetness, floods.	Severe: wetness, floods.	Moderate: wetness, floods.	Severe: floods, wetness.
Riverview	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight	Moderate: floods.
DgA Dogue	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight	Slight.
DhA:*					
Dogue	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight	Slight.
Urban land.					
DoA Dothan	Slight	Slight	Slight	Slight	Slight.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DoB---- Dothan	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
DuB:* Dothan---- Urban land.	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
FeA---- Faceville	Slight----	Slight----	Slight----	Slight----	Slight.
FeB---- Faceville	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
FeC---- Faceville	Slight----	Slight----	Severe: slope.	Slight----	Slight.
FsB---- Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.	Moderate: droughty.
FuC:* Fuquay---- Urban land.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.	Moderate: droughty.
GgB---- Georgeville	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
GgC---- Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Moderate: slope.
GhC:* Georgeville---- Urban land.	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
GmA---- Goldsboro	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight----	Slight.
GnA:* Goldsboro---- Urban land.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight----	Slight.
GoE---- Goldston	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Moderate: small stones.	Severe: slope, thin layer.
Gr---- Grady	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
GvB---- Grover	Slight----	Slight----	Moderate: slope.	Slight----	Slight.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GvC--- Grover	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight---	Moderate: slope.
HZ.* Hydraquents					
LkB--- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
LkC, LkD--- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Severe: droughty.
LmB--- Lucy	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.	Moderate: droughty.
LmC--- Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
LmD--- Lucy	Moderate: too sandy, slope.	Moderate: too sandy, slope.	Severe: slope.	Moderate: too sandy.	Moderate: droughty. slope.
MkB--- Mecklenburg	Slight---	Slight---	Moderate: slope, small stones.	Slight---	Slight.
OeA--- Orangeburg	Slight---	Slight---	Slight---	Slight---	Slight.
OeB--- Orangeburg	Slight---	Slight---	Moderate: slope.	Slight---	Slight.
OeD--- Orangeburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight---	Moderate: slope.
OsC--- Orangeburg	Slight---	Slight---	Severe: slope.	Slight---	Slight.
Pm.* Pits					
Ra--- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Rh:* Rains--- Urban land.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ro--- Riverview	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight---	Moderate: floods.
Rp:* Riverview--- Urban land.	Slight---	Slight---	Slight---	Slight---	Slight.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Rr---------- Roanoke	Severe: floods, wetness, percs slowly.	Severe: wetness.	Severe: floods, wetness, percs slowly.	Severe: wetness.	Severe: floods, wetness.
TwB---------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
TwC, TwD---------- Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
TxC:* Troup----------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Urban land.					
UaA,* Uc.* Udorthents					
Ud.* Urban land					
VaC,* VaD:* Vaucluse----------	Moderate: percs slowly, too sandy.	Moderate: too sandy.	Severe: slope.	Slight----------	Moderate: droughty.
Ailey----------	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
VuC,* VuD:* Vaucluse----------	Moderate: percs slowly, too sandy.	Moderate: too sandy.	Severe: slope.	Slight----------	Moderate: droughty.
Urban land.					
WeC, WeD---------- Wedowee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
WuC,* WuD:* Wedowee----------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
Urban land.					
WvB:* Wickham----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Urban land.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AgB---- Ailey	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AgC---- Ailey	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AgD---- Ailey	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Av---- Altavista	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BO:*										
Bibb----	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Osier----	Very poor.	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
Ca---- Chastain	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
CC:*										
Chewacla----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Chastain----	Very poor.	Poor	Poor	Fair	Poor	Good	Good	Poor	Fair	Good.
CR:*										
Chewacla----	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Riverview----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
DgA---- Dogue	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
DhA:*										
Dogue----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Urban land.										
DoA, DoB---- Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DuB:*										
Dothan----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
FeA---- Faceville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FeB---- Faceville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FeC---- Faceville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FsB---- Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
FuC:* Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Urban land.										
GgB, GgC Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GhC:* Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
GmA Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GnA:* Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Urban land.										
GoE Goldston	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Gr Grady	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
GvB Grover	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GvC Grover	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HZ.* Hydraquents										
LkB, LkC, LkD Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
LmB, LmC Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
LmD Lucy	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MkB Mecklenburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OeA, OeB Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OeD, OsC Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pm.* Pits										
Ra Rains	Very poor.	Very poor.	Very poor.	Fair	Fair	Good	Good	Very poor.	Poor	Good.
Rh:* Rains	Very poor.	Very poor.	Very poor.	Fair	Fair	Good	Good	Very poor.	Poor	Good.
Urban land.										

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ro---------- Riverview	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rp:* Riverview----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Urban land.										
Rr---------- Roanoke	Poor	Poor	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
TwB, TwC, TwD------ Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
TxC:* Troup----------	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Urban land.										
UaA,* Uc.* Udorthents										
Ud.* Urban land										
VaC:* Vaucluse----------	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ailey----------	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
VaD:* Vaucluse----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ailey----------	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
VuC:* Vaucluse----------	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
VuD:* Vaucluse----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Urban land.										
WeC, WeD---------- Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WuC,* WuD:* Wedowee----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
WvB:* Wickham----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AgB---- Ailey	Moderate: cutbanks cave.	Slight----	Slight----	Slight----	Slight----	Moderate: droughty.
AgC---- Ailey	Moderate: cutbanks cave.	Slight----	Slight----	Moderate: slope.	Slight----	Moderate: droughty.
AgD---- Ailey	Moderate: slope, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Av---- Altavista	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: floods.	Moderate: wetness, floods.
BO:* Bibb----	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Osier----	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Ca---- Chastain	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
CC:* Chewacla----	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.	Severe: floods, wetness.
Chastain----	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
CR:* Chewacla----	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.	Severe: floods, wetness.
Riverview----	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
DgA---- Dogue	Moderate: wetness, too clayey.	Moderate: shrink-swell.	Severe: wetness, shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
DhA:* Dogue----	Moderate: wetness, too clayey.	Moderate: shrink-swell.	Severe: wetness, shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
Urban land.						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DoA, DoB---------- Dothan	Slight----------	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Slight.
DuB:* Dothan----------	Slight----------	Slight----------	Moderate: wetness.	Slight----------	Slight----------	Slight.
Urban land.						
FeA, FeB---------- Faceville	Moderate: too clayey.	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
FeC---------- Faceville	Moderate: too clayey.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
FsB---------- Fuquay	Slight----------	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty.
FuC:* Fuquay----------	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
Urban land.						
GgB---------- Georgeville	Moderate: too clayey.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
GgC---------- Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
GhC:* Georgeville------	Moderate: too clayey.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Urban land.						
GmA---------- Goldsboro	Moderate: wetness.	Slight----------	Moderate: wetness.	Moderate: wetness.	Slight----------	Slight.
GnA:* Goldsboro--------	Moderate: wetness.	Slight----------	Moderate: wetness.	Moderate: wetness.	Slight----------	Slight.
Urban land.						
GoE---------- Goldston	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Gr---------- Grady	Severe: ponding, wetness.	Severe: ponding, wetness.	Severe: ponding, wetness.	Severe: ponding, wetness.	Severe: ponding, wetness.	Severe: ponding, wetness.
GvB---------- Grover	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GvC---------- Grover	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
HZ.* Hydraquents						
LkB---------- Lakeland	Severe: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Severe: droughty.
LkC---------- Lakeland	Severe: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Severe: droughty.
LkD---------- Lakeland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty, slope.
LmB---------- Lucy	Moderate: cutbanks cave.	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty.
LmC---------- Lucy	Moderate: cutbanks cave.	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
LmD---------- Lucy	Moderate: slope, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
MkB---------- Mecklenburg	Severe: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
OeA, OeB---------- Orangeburg	Slight----------	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
OeD---------- Orangeburg	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
OsC---------- Orangeburg	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Pm.* Pits						
Ra---------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Rh:* Rains----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Urban land.						
Ro---------- Riverview	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Rp:*						
Riverview	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Slight.
Urban land.						
Rr Roanoke	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
TwB Troup	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: droughty.
TwC Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
TwD Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
TxC:*						
Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
Urban land.						
UaA,* Uc.* Udorthents						
Ud.* Urban land						
VaC:*						
Vaucluse	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Ailey	Moderate: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
VaD:*						
Vaucluse	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty.
Ailey	Moderate: slope, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty.
VuC:*						
Vaucluse	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Urban land.						
VuD:*						
Vaucluse	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
VuD*: Urban land.						
WeC, WeD---------- Wedowee	Moderate: slope.	Moderate: slope, shrink-swell.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: slope, shrink-swell.	Moderate: slope.
WuC,* WuD:* Wedowee----------	Moderate: slope.	Moderate: slope, shrink-swell.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: slope, shrink-swell.	Moderate: slope.
Urban land.						
WvB:* Wickham----------	Slight----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Urban land.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AgB, AgC---------- Ailey	Severe: percs slowly.	Moderate: slope.	Slight----------	Slight----------	Good.
AgD---------- Ailey	Severe: percs slowly.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
Av---------- Altavista	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods, seepage.	Severe: wetness, floods, seepage.	Good.
BO:*					
Bibb----------	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Osier----------	Severe: floods, wetness.	Severe: floods, seepage.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness, too sandy.
Ca---------- Chastain	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: wetness.
CC:*					
Chewacla----------	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
Chastain----------	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: wetness.
CR:*					
Chewacla----------	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
Riverview----------	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods, seepage.	Fair: thin layer.
DgA---------- Dogue	Severe: percs slowly, wetness.	Severe: seepage, wetness.	Severe: too clayey, seepage, wetness.	Severe: wetness.	Poor: too clayey, hard to pack.
DhA:*					
Dogue----------	Severe: percs slowly, wetness.	Severe: seepage, wetness.	Severe: too clayey, seepage, wetness.	Severe: wetness.	Poor: too clayey, hard to pack.
Urban land.					
DoA---------- Dothan	Moderate: percs slowly.	Moderate: seepage.	Slight----------	Slight----------	Good.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DoB---------- Dothan	Moderate: percs slowly.	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
DuB:* Dothan----------	Moderate: percs slowly.	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
Urban land.					
FeA---------- Faceville	Slight----------	Moderate: seepage.	Moderate: too clayey.	Slight----------	Fair: too clayey.
FeB, FeC---------- Faceville	Slight----------	Moderate: slope, seepage.	Moderate: too clayey.	Slight----------	Fair: too clayey.
FsB---------- Fuquay	Moderate: percs slowly.	Moderate: slope.	Slight----------	Slight----------	Good.
FuC:* Fuquay----------	Moderate: percs slowly.	Moderate: slope.	Slight----------	Slight----------	Good.
Urban land.					
GgB---------- Georgeville	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight----------	Poor: too clayey.
GgC---------- Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: too clayey.
GhC:* Georgeville--------	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: too clayey.	Slight----------	Poor: too clayey.
Urban land.					
GmA---------- Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
GnA:* Goldsboro----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Urban land.					
GoE---------- Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: seepage.	Poor: small stones, thin layer.
Gr---------- Grady	Severe: ponding, percs slowly, wetness.	Severe: ponding.	Severe: ponding, wetness.	Severe: ponding, wetness.	Poor: wetness, too clayey.
GvB---------- Grover	Moderate: percs slowly.	Moderate: slope, seepage.	Severe: depth to rock.	Slight----------	Fair: hard to pack.
GvC---------- Grover	Moderate: slope, percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, hard to pack.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HZ.* Hydraquents					
LkB---------- Lakeland	Slight----------	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
LkC---------- Lakeland	Slight----------	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
LkD---------- Lakeland	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
LmB, LmC---------- Lucy	Slight----------	Severe: seepage.	Slight----------	Slight----------	Good.
LmD---------- Lucy	Moderate: slope.	Severe: seepage, slope.	Slight----------	Moderate: slope.	Fair: slope.
MkB---------- Mecklenburg	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, depth to rock.	Slight----------	Poor: thin layer.
OeA---------- Orangeburg	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
OeB---------- Orangeburg	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
OeD---------- Orangeburg	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
OsC---------- Orangeburg	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
Pm.* Pits					
Ra---------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Rh:* Rains----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Urban land.					
Ro---------- Riverview	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods, seepage.	Fair: thin layer.
Rp:* Riverview----------	Severe: wetness.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: thin layer.
Urban land.					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Rr Roanoke	Severe: floods, percs slowly, wetness.	Slight	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Poor: hard to pack, too clayey, wetness.
TwB Troup	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.
TwC Troup	Slight	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.
TwD Troup	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.
TxC:* Troup	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.
Urban land.					
UaA,* Uc.* Udorthents					
Ud.* Urban land					
VaC:* Vaucluse	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Ailey	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
VaD:* Vaucluse	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Ailey	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
VuC:* Vaucluse	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Urban land.					
VuD:* Vaucluse	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Urban land.					
WeC, WeD Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey, area reclaim, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WuC,* WuD:*					
Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey, area reclaim, slope.
Urban land.					
WvB:*					
Wickham	Slight	Moderate: slope, seepage.	Severe: seepage.	Slight	Good.
Urban land.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AgB, AgC, AgD--------- Ailey	Good----------	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
Av---------- Altavista	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
BO:*				
Bibb----------	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Osier----------	Poor: wetness.	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy, wetness.
Ca---------- Chastain	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
CC:*				
Chewacla----------	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Chastain----------	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
CR:*				
Chewacla----------	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Riverview----------	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
DgA---------- Dogue	Poor: low strength, area reclaim.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer.
DhA:*				
Dogue---------- Urban land.	Poor: low strength, area reclaim.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer.
DoA, DoB---------- Dothan	Good----------	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer, too sandy.
DuB:*				
Dothan---------- Urban land.	Good----------	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer, too sandy.
FeA, FeB, FeC--------- Faceville	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
FsB---------- Fuquay	Good----------	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
FuC:* Fuquay	Good	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Urban land.				
GgB, GgC---- Georgeville	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
GhC:* Georgeville	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Urban land.				
GmA---- Goldsboro	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
GnA:* Goldsboro	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
GoE---- Goldston	Poor: thin layer, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, area reclaim.
Gr---- Grady	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
GvB, GvC---- Grover	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
HZ.* Hydraquents				
LkB, LkC, LkD---- Lakeland	Good	Good	Unsuited: excess fines.	Poor: too sandy.
LmB, LmC---- Lucy	Fair: low strength.	Fair: excess fines, thin layer.	Unsuited: excess fines.	Fair: too sandy.
LmD---- Lucy	Fair: low strength.	Fair: excess fines, thin layer.	Unsuited: excess fines.	Fair: too sandy, slope.
MkB---- Mecklenburg	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Poor: thin layer.
OeA, OeB, OeD, OsC---- Orangeburg	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Pm.* Pits				
Ra---- Rains	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Rh:* Rains	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Urban land.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ro---------- Riverview	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Rp:* Riverview----------	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
Rr---------- Roanoke	Poor: area reclaim, low strength, wetness.	Poor: excess fines.	Poor: excess fines.	Poor: area reclaim, thin layer, wetness.
TwB, TwC, TwD--------- Troup	Good----------	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
TxC:* Troup----------	Good----------	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Urban land.				
UaA,* Uc.* Udorthents				
Ud.* Urban land				
VaC,* VaD:* Vaucluse----------	Good----------	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too sandy.
Ailey----------	Good----------	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
VuC,* VuD:* Vaucluse----------	Good----------	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too sandy.
Urban land.				
WeC, WeD---------- Wedowee	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer, area reclaim.
WuC,* WuD:* Wedowee----------	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer, area reclaim.
Urban land.				
WvB:* Wickham----------	Good----------	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Urban land.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AgB, AgC, AgD----- Ailey	Slight---------	Moderate: piping.	Not needed-----	Droughty, complex slope.	Cemented pan, complex slope.	Droughty.
Av---------- Altavista	Moderate: seepage.	Moderate: thin layer, wetness.	Floods---------	Wetness, floods.	Not needed-----	Favorable.
BO:*						
Bibb----------	Moderate: seepage.	Severe: piping, wetness.	Floods---------	Floods, wetness.	Not needed-----	Wetness.
Osier----------	Severe: seepage.	Severe: seepage, unstable fill.	Floods, cutbanks cave.	Floods, seepage.	Not needed-----	Not needed.
Ca---------- Chastain	Slight---------	Severe: wetness, hard to pack.	Floods, percs slowly.	Wetness, percs slowly, slow intake.	Not needed-----	Wetness, percs slowly.
CC:*						
Chewacla---------	Moderate: seepage.	Severe: hard to pack, piping, wetness.	Poor outlets, floods.	Wetness, floods.	Not needed-----	Wetness.
Chastain---------	Slight---------	Severe: wetness, hard to pack.	Floods, percs slowly.	Wetness, percs slowly, slow intake.	Not needed-----	Wetness, percs slowly.
CR:*						
Chewacla---------	Moderate: seepage.	Severe: hard to pack, piping, wetness.	Poor outlets, floods.	Wetness, floods.	Not needed-----	Wetness.
Riverview--------	Moderate: seepage.	Moderate: piping.	Not needed-----	Floods---------	Favorable------	Favorable.
DgA---------- Dogue	Moderate: seepage.	Moderate: hard to pack.	Favorable, percs slowly.	Wetness--------	Wetness--------	Wetness.
DhA:*						
Dogue----------	Moderate: seepage.	Moderate: hard to pack.	Favorable------	Wetness--------	Wetness--------	Wetness.
Urban land.						
DoA---------- Dothan	Slight---------	Slight---------	Not needed-----	Fast intake----	Not needed-----	Favorable.
DoB---------- Dothan	Slight---------	Slight---------	Not needed-----	Fast intake----	Too sandy------	Favorable.
DuB:*						
Dothan----------	Slight---------	Slight---------	Not needed-----	Fast intake----	Too sandy------	Favorable.
Urban land.						
FeA, FeB---------- Faceville	Moderate: seepage.	Slight---------	Not needed-----	Favorable------	Favorable------	Favorable.
FeC---------- Faceville	Moderate: seepage.	Slight---------	Not needed-----	Slope----------	Favorable------	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
FsB---------- Fuquay	Slight---------	Moderate: piping.	Not needed-----	Fast intake----	Favorable------	Favorable.
FuC:* Fuquay----------	Slight---------	Moderate: piping.	Not needed-----	Fast intake----	Favorable------	Favorable.
Urban land.						
GgB---------- Georgeville	Moderate: slope, seepage.	Moderate: compressible, erodes easily.	Not needed-----	Complex slope, erodes easily.	Favorable------	Favorable.
GgC---------- Georgeville	Moderate: slope, seepage.	Moderate: compressible, erodes easily.	Not needed-----	Complex slope, erodes easily.	Complex slope, erodes easily.	Slope, erodes easily.
GhC:* Georgeville------	Moderate: slope, seepage.	Moderate: compressible, erodes easily.	Not needed-----	Complex slope, erodes easily.	Favorable------	Favorable.
Urban land.						
GmA---------- Goldsboro	Moderate: seepage.	Moderate: wetness.	Favorable------	Wetness, fast intake.	Not needed-----	Favorable.
GnA:* Goldsboro--------	Moderate: seepage.	Moderate: wetness.	Favorable------	Wetness, fast intake.	Not needed-----	Favorable.
Urban land.						
GoE---------- Goldston	Severe: seepage.	Severe: thin layer.	Not needed-----	Fast intake, slope.	Depth to rock, complex slope.	Slope.
Gr---------- Grady	Moderate: seepage.	Slight---------	Ponding, wetness, poor outlets.	Wetness, percs slowly, ponding.	Not needed-----	Not needed.
GvB---------- Grover	Moderate: seepage.	Moderate: hard to pack, piping.	Not needed-----	Favorable------	Favorable------	Favorable.
GvC---------- Grover	Moderate: seepage.	Moderate: hard to pack, piping.	Not needed-----	Slope----------	Slope----------	Slope.
HZ.* Hydraquents						
LkB, LkC, LkD----- Lakeland	Severe: seepage.	Severe: seepage, piping.	Not needed-----	Droughty, seepage, fast intake.	Not needed-----	Not needed.
LmB, LmC, LmD----- Lucy	Severe: seepage.	Moderate: thin layer.	Not needed-----	Slope, fast intake.	Too sandy, slope.	Droughty, slope.
MkB---------- Mecklenburg	Slight---------	Severe: hard to pack.	Not needed-----	Slow intake, percs slowly, slope.	Slope, percs slowly.	Percs slowly, slope.
OeA---------- Orangeburg	Moderate: seepage.	Slight---------	Not needed-----	Fast intake----	Not needed-----	Favorable.
OeB---------- Orangeburg	Moderate: seepage.	Slight---------	Not needed-----	Fast intake----	Favorable------	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
OeD---------- Orangeburg	Moderate: seepage.	Slight---------	Not needed-----	Slope----------	Slope----------	Slope.
OsC---------- Orangeburg	Moderate: seepage.	Slight---------	Not needed-----	Slope----------	Favorable------	Favorable.
Pm.* Pits						
Ra---------- Rains	Moderate: seepage.	Severe: wetness.	Favorable------	Wetness, fast intake.	Not needed-----	Wetness.
Rh:* Rains----------	Moderate: seepage.	Severe: wetness.	Favorable------	Wetness, fast intake.	Not needed-----	Wetness.
Urban land.						
Ro---------- Riverview	Moderate: seepage.	Moderate: piping.	Not needed-----	Floods---------	Favorable------	Favorable.
Rp:* Riverview--------	Moderate: seepage.	Moderate: piping.	Not needed-----	Favorable------	Favorable------	Favorable.
Urban land.						
Rr---------- Roanoke	Slight---------	Moderate: compressible, hard to pack.	Floods, percs slowly, poor outlets.	Slow intake, wetness, percs slowly.	Not needed-----	Not needed.
TwB, TwC, TwD----- Troup	Severe: seepage.	Severe: piping.	Not needed-----	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
TxC:* Troup----------	Severe: seepage.	Severe: piping.	Not needed-----	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
Urban land.						
UaA,* Uc.* Udorthents						
Ud.* Urban land						
VaC,* VaD:* Vaucluse---------	Slight---------	Moderate: piping.	Not needed-----	Complex slope	Complex slope, percs slowly.	Percs slowly.
Ailey----------	Slight---------	Moderate: piping.	Not needed-----	Droughty, complex slope.	Cemented pan, complex slope.	Droughty.
VuC*, VuD:* Vaucluse---------	Slight---------	Moderate: piping.	Not needed-----	Complex slope	Complex slope, percs slowly.	Percs slowly.
Urban land.						
WeC---------- Wedowee	Moderate: seepage.	Moderate: thin layer.	Not needed-----	Slope----------	Favorable------	Favorable.
WeD---------- Wedowee	Moderate: seepage.	Moderate: thin layer.	Not needed-----	Slope----------	Slope----------	Slope.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
WuC:*						
Wedowee	Moderate: seepage.	Moderate: thin layer.	Not needed	Slope	Favorable	Favorable.
Urban land.						
WuD:*						
Wedowee	Moderate: seepage.	Moderate: thin layer.	Not needed	Slope	Slope	Slope.
Urban land.						
WvB:*						
Wickham	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
Urban land.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AgB, AgC, AgD---- Ailey	0-27	Loamy sand----	SM, SP-SM	A-2, A-3	0	85-100	75-100	50-80	5-20	---	NP
	27-48	Sandy loam, sandy clay loam.	SM, SC	A-2, A-4, A-6	0	90-100	75-100	60-90	30-40	30-40	8-16
	48-75	Sandy loam, sandy clay loam.	SM, SC	A-2, A-4, A-6	0	90-100	75-100	55-90	20-40	28-40	8-14
Av---- Altavista	0-8	Sandy loam----	SM	A-2	0	95-100	95-100	50-75	15-35	---	NP
	8-41	Clay loam, sandy clay loam, loam.	CL, CL-ML, SM-SC, SC	A-4, A-2, A-6, A-7	0	95-100	95-100	60-95	28-75	20-45	5-26
	41-70	Variable----	---	---	0	---	---	---	---	---	---
BO:*											
Bibb----	0-16	Sandy loam----	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	16-62	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
Osier----	0-13	Loamy fine sand	SM	A-2	0	100	98-100	70-90	13-25	---	NP
	13-45	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	95-100	65-90	5-20	---	NP
	45-65	Coarse sand, sand, fine sand.	SP, SP-SM	A-1, A-3	0	100	90-100	40-60	2-10	---	NP
Ca---- Chastain	0-4	Loam----	ML, CL, CL-ML	A-4, A-6, A-7	0	100	100	90-100	70-95	23-45	3-18
	4-45	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	95-100	85-98	35-75	12-40
	45-65	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	90-100	70-90	30-78	11-42
CC:*											
Chewacla----	0-3	Fine sandy loam	SM, SM-SC	A-2, A-4	0	98-100	95-100	60-90	30-50	<35	NP-7
	3-42	Sandy clay loam, loam, sandy loam.	SM, CL-ML, SM-SC, ML	A-4	0	96-100	95-100	60-80	36-70	<35	NP-7
	42-62	Silt loam, clay loam, silty clay loam.	ML, MH	A-4, A-5, A-6, A-7	0	75-100	65-100	60-100	51-98	32-61	4-28
Chastain----	0-4	Loam----	ML, CL, CL-ML	A-4, A-6, A-7	0	100	100	90-100	70-95	23-45	3-18
	4-45	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	95-100	85-98	35-75	12-40
	45-65	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	90-100	70-90	30-78	11-42

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CR:*											
Chewacla	0-19	Silt loam	ML	A-4, A-5, A-6, A-7	0	98-100	95-100	70-100	55-90	36-50	4-18
	19-23	Sandy clay loam, loam, sandy loam.	SM, CL-ML, SM-SC, ML	A-4	0	96-100	95-100	60-80	36-70	<35	NP-7
	23-60	Silt loam, clay loam, silty clay loam.	ML, MH	A-4, A-5, A-6, A-7	0	75-100	65-100	60-100	51-98	32-61	4-28
Riverview	0-6	Loam	CL, CL-ML	A-4	0	100	100	90-100	60-80	15-30	5-10
	6-65	Loamy fine sand, sandy loam, silty clay loam.	SM, SC, ML, CL	A-2, A-4, A-6	0	100	100	80-95	20-80	<40	NP-20
DgA	0-8	Fine sandy loam	SM, SC, SM-SC	A-2, A-4	0	95-100	75-100	50-85	16-49	<25	NP-8
Dogue	8-56	Clay loam, clay, sandy clay loam.	CL, CH, SC	A-6, A-7	0	95-100	75-100	65-95	40-90	35-60	14-32
	56-62	Stratified sand to sandy clay loam.	SM, SC, SP-SM, SM-SC	A-2, A-4, A-1	0	80-100	60-100	35-70	10-40	<26	NP-8
DhA:*											
Dogue	0-8	Fine sandy loam	SM, SC, SM-SC	A-2, A-4	0	95-100	75-100	50-85	16-49	<25	NP-8
	8-56	Clay loam, clay, sandy clay loam.	CL, CH, SC	A-6, A-7	0	95-100	75-100	65-95	40-90	35-60	14-32
	56-62	Stratified sand to sandy clay loam.	SM, SC, SP-SM, SM-SC	A-2, A-4, A-1	0	80-100	60-100	35-70	10-40	<26	NP-8
Urban land.											
DoA, DoB	0-10	Loamy sand	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
Dothan	10-48	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-45	<40	NP-15
	48-65	Sandy clay loam, sandy clay.	SM-SC, SC, SM	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-49	25-45	4-18
DuB:*											
Dothan	0-12	Loamy sand	SM	A-2	0	95-100	92-100	60-80	13-30	---	NP
	12-48	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	92-100	68-90	23-45	<40	NP-15
	48-65	Sandy clay loam, sandy clay.	SM-SC, SC, SM	A-2, A-4, A-6, A-7	0	95-100	92-100	70-95	30-49	25-45	4-18
Urban land.											
FeA, FeB, FeC	0-8	Sandy loam	SM, SM-SC	A-2, A-4	0	90-100	85-100	72-97	17-38	<25	NP-5
Faceville	8-11	Sandy clay loam, sandy clay.	SC, ML, CL, SM	A-4, A-6	0	98-100	90-100	85-98	46-66	<35	NP-13
	11-62	Sandy clay, clay, clay loam.	CL, SC	A-6, A-7	0	98-100	95-100	75-99	45-72	25-43	11-23

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FsB----------	0-30	Loamy sand------	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
Fuquay	30-35	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	85-100	85-100	60-80	23-45	<25	NP-13
	35-65	Sandy clay loam	SC, CL	A-2, A-4, A-6	0	95-100	90-100	60-93	28-55	20-39	8-25
FuC:*											
Fuquay----------	0-30	Loamy sand------	SP-SM, SM	A-2, A-3	0	95-100	90-100	50-83	5-35	---	NP
	30-35	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	85-100	85-100	60-80	23-45	<25	NP-13
	35-65	Sandy clay loam	SC, CL	A-2, A-4, A-6	0	95-100	90-100	60-93	28-55	20-39	8-25
Urban land.											
GgB, GgC----------	0-5	Loam----------	ML, CL-ML	A-4	0-3	90-100	85-100	65-100	51-98	<40	NP-10
Georgeville	5-38	Silty clay, silty clay loam, clay loam.	MH, ML	A-7-5, A-7-6	0	95-100	95-100	90-100	75-98	41-75	15-35
	38-52	Silty clay loam, silt loam, clay loam.	MH	A-7-5, A-7-6	0	95-100	90-100	65-100	60-98	50-75	15-35
	52-64	Silt loam-------	ML, CL, CL-ML	A-4	0-5	90-100	90-100	65-100	60-95	<30	NP-10
GhC:*											
Georgeville-------	0-5	Loam----------	ML, CL-ML	A-4	0-3	90-100	85-100	65-100	51-98	<40	NP-10
	5-38	Silty clay, silty clay loam, clay loam.	MH, ML	A-7-5, A-7-6	0	95-100	95-100	90-100	75-98	41-75	15-35
	38-52	Silty clay loam, silt loam, clay loam.	MH	A-7-5, A-7-6	0	95-100	90-100	65-100	60-98	50-75	15-35
	52-64	Silt loam-------	ML, CL, CL-ML	A-4	0-5	90-100	90-100	65-100	60-95	<30	NP-10
Urban land.											
GmA----------	0-11	Sandy loam------	SM, SM-SC, SC	A-2, A-4, A-6	0	90-100	75-100	50-95	15-45	<25	NP-14
Goldsboro	11-84	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-95	25-55	16-35	4-16
GnA:*											
Goldsboro---------	0-11	Sandy loam------	SM, SM-SC, SC	A-2, A-4, A-6	0	90-100	75-100	50-95	15-45	<25	NP-14
	11-84	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-95	25-55	16-35	4-16
Urban land.											

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
GoE---------- Goldston	0-3	Slaty silt loam	GM, SM, ML, GM-GC	A-4	5-20	60-80	55-75	50-70	40-60	<35	NP-10
	3-13	Slaty silt loam, slaty very fine sandy loam.	GM, SM, ML, GM-GC	A-2, A-4, A-5	10-30	55-100	50-92	45-90	25-80	<45	NP-10
	13-20	Slaty silt loam	GM	A-2	20-40	25-40	25-40	20-40	15-35	<20	NP-3
Gr---------- Grady	0-4	Loam----------	SM, ML, CL-ML, SM-SC	A-4, A-6	0	100	99-100	85-100	40-75	<30	NP-15
	4-62	Clay, sandy clay	CL, ML, CH	A-6, A-7	0	100	100	90-100	55-90	30-50	12-25
GvB, GvC---------- Grover	0-10	Sandy loam------	SM, SM-SC, SC	A-4	0-5	95-100	90-100	50-75	36-49	<30	NP-10
	10-33	Sandy clay loam, clay loam.	SC, CL	A-6, A-7	0-5	95-100	90-100	70-85	40-70	35-50	12-25
	33-60	Variable--------	---	---	---	---	---	---	---	---	---
HZ.* Hydraquents											
LkB, LkC, LkD------ Lakeland	0-70	Sand----------	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	70-99	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
LmB, LmC, LmD------ Lucy	0-29	Loamy sand------	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	29-32	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	97-100	95-100	55-95	15-49	10-30	NP-15
	32-80	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-49	20-40	5-20
MkB---------- Mecklenburg	0-14	Loam----------	ML, SM	A-4, A-6, A-7-6	0-5	90-100	80-100	65-90	36-65	<45	NP-15
	14-31	Clay----------	CH, MH	A-7	0-5	90-100	85-100	80-100	75-95	51-75	24-45
	31-37	Variable--------	---	---	---	---	---	---	---	---	---
OeA, OeB, OeD------ Orangeburg	0-10	Loamy sand------	SM	A-2	0	98-100	95-100	60-75	14-27	---	NP
	10-50	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
	50-64	Sandy clay loam, sandy clay.	SC, CL	A-6, A-4	0	98-100	95-100	70-97	40-65	25-40	8-21
OsC---------- Orangeburg	0-5	Sandy loam------	SM	A-2	0	98-100	95-100	75-95	20-35	---	NP
	5-50	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
	50-60	Sandy clay loam, sandy clay.	SC, CL	A-6, A-4	0	98-100	95-100	70-97	40-65	25-40	8-21
Pm.* Pits											
Ra---------- Rains	0-16	Loamy sand------	SM	A-2	0	100	95-100	60-98	15-35	<30	NP-4
	16-24	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	98-100	65-98	30-70	18-40	4-18
	24-65	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7	0	100	98-100	65-98	36-72	18-45	4-22

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Rh:*											
Rains	0-16	Loamy sand	SM	A-2	0	100	95-100	60-98	15-35	<30	NP-4
	16-24	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	98-100	65-98	30-70	18-40	4-18
	24-60	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7	0	100	98-100	65-98	36-72	18-45	4-22
Urban land.											
Ro	0-33	Silt loam	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	60-95	<40	5-11
Riverview	33-65	Loamy fine sand, sandy loam, silty clay loam.	SM, SC, ML, CL	A-2, A-4, A-6	0	100	100	80-100	20-85	<40	NP-20
Rp:*											
Riverview	0-33	Silt loam	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	60-95	<40	5-11
	33-65	Loamy fine sand, sandy loam, silty clay loam.	SM, SC, ML, CL	A-2, A-4, A-6	0	100	100	80-100	20-85	<40	NP-20
Urban land.											
Rr	0-5	Loam	ML, CL-ML, CL, SM	A-6, A-4	0	95-100	85-100	60-100	35-90	25-40	5-16
Roanoke	5-48	Clay, silty clay, clay loam.	CH, MH, CL	A-7	0	90-100	85-100	85-100	65-95	45-60	22-36
	48-96	Variable	---	---	---	---	---	---	---	---	---
TwB, TwC, TwD	0-54	Fine sand	SM	A-2, A-4	0	100	100	65-90	15-40	---	NP
Troup	54-80	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
TxC:*											
Troup	0-66	Fine sand	SM	A-2, A-4	0	100	100	65-90	15-40	---	NP
	66-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Urban land.											
UaA,* Uc.* Udorthents											
Ud.* Urban land											
VaC,* VaD:*											
Vaucluse	0-8	Loamy sand	SM, SP-SM	A-2, A-3	0	98-100	90-100	51-70	8-30	---	NP
	8-20	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	98-100	90-100	51-70	25-49	20-40	5-18
	20-60	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC	A-2, A-4, A-6	0	95-100	92-100	55-75	20-49	22-40	4-20

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
VaC,* VaD:*											
Ailey	0-25	Loamy sand	SM, SP-SM	A-2, A-3	0	85-100	75-100	50-80	5-20	---	NP
	25-29	Sandy loam, sandy clay loam.	SM, SC	A-2, A-4, A-6	0	90-100	75-100	60-90	30-40	30-40	8-16
	29-65	Sandy loam, sandy clay loam.	SM, SC	A-2, A-4, A-6	0	90-100	75-100	55-90	20-40	28-40	8-14
VuC,* VuD:*											
Vaucluse	0-9	Loamy sand	SM, SP-SM	A-2, A-3	0	98-100	90-100	51-70	8-30	---	NP
	9-19	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	98-100	90-100	51-70	25-49	20-40	5-18
	19-60	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC	A-2, A-4, A-6	0	95-100	92-100	55-75	20-49	22-40	4-20
Urban land.											
WeC, WeD	0-4	Fine sandy loam	SM, SM-SC	A-4	0	95-100	90-100	60-85	30-50	<30	NP-6
Wedowee	4-7	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	90-100	90-100	80-97	40-75	<32	NP-15
	7-35	Sandy clay, clay loam, clay.	SC, ML, CL, SM	A-4, A-6, A-7	0	95-100	95-100	65-97	45-70	30-58	10-25
	35-45	Variable	---	---	---	---	---	---	---	---	---
WuC:*											
Wedowee	0-6	Loam	SM, SM-SC	A-4	0	95-100	90-100	60-85	30-49	<30	NP-6
	6-11	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	90-100	90-100	80-97	40-75	<32	NP-15
	11-30	Sandy clay, clay loam, clay.	SC, ML, CL, SM	A-4, A-6, A-7	0	95-100	95-100	65-97	45-70	30-58	10-25
	30-45	Variable	---	---	---	---	---	---	---	---	---
Urban land.											
WuD:*											
Wedowee	0-4	Fine sandy loam	SM, SM-SC	A-4	0	95-100	90-100	60-85	30-49	<30	NP-6
	4-7	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	90-100	90-100	80-97	40-75	<32	NP-15
	7-35	Sandy clay, clay loam, clay.	SC, ML, CL, SM	A-4, A-6, A-7	0	95-100	95-100	65-97	45-70	30-58	10-25
	35-45	Variable	---	---	---	---	---	---	---	---	---
Urban land.											
WvB:*											
Wickham	0-8	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
	8-60	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	5-15
	60-78	Variable	---	---	---	---	---	---	---	---	---
Urban land.											

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
AgB, AgC, AgD----	0-27	6.0-20	0.03-0.05	4.5-6.5	Low----------	0.20	4
Ailey	27-48	0.6-2.0	0.09-0.12	4.5-5.5	Low----------	0.24	
	48-75	0.06-0.2	0.06-0.10	4.5-5.5	Low----------	0.17	
Av----------	0-8	2.0-20	0.07-0.12	4.5-6.0	Low----------	0.20	4
Altavista	8-41	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.24	
	41-70	---	---	---	----------	----	
BO:*							
Bibb----------	0-16	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.20	5
	16-62	0.6-2.0	0.12-0.20	4.5-5.5	Low----------	0.37	
Osier----------	0-13	6.0-20	0.10-0.15	4.5-6.0	Low----------	----	---
	13-45	6.0-20	0.03-0.10	4.5-6.0	Low----------	----	
	45-65	>20	0.02-0.05	4.5-6.0	Low----------	----	
Ca----------	0-4	0.2-0.6	0.12-0.18	4.5-5.5	Moderate-------	0.32	5
Chastain	4-45	0.06-0.2	0.12-0.16	4.5-5.5	Moderate-------	0.37	
	45-65	0.06-0.2	0.12-0.16	4.5-5.5	Moderate-------	0.37	
CC:*							
Chewacla--------	0-3	0.6-2.0	0.10-0.15	4.5-6.5	Low----------	0.24	4
	3-42	0.6-2.0	0.12-0.20	4.5-6.5	Low----------	0.28	
	42-62	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.32	
	58-70	---	---	---	----------	----	
Chastain--------	0-4	0.2-0.6	0.12-0.18	4.5-5.5	Moderate-------	0.32	5
	4-45	0.06-0.2	0.12-0.16	4.5-5.5	Moderate-------	0.37	
	45-65	0.06-0.2	0.12-0.16	4.5-5.5	Moderate-------	0.37	
CR:*							
Chewacla--------	0-19	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.28	4
	19-23	0.6-2.0	0.12-0.20	4.5-6.5	Low----------	0.28	
	23-60	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.32	
Riverview-------	0-6	0.6-2.0	0.16-0.24	4.5-5.5	Low----------	0.28	4
	6-65	2.0-6.0	0.07-0.11	4.5-5.5	Very low-------	0.17	
DgA----------	0-8	2.0-6.0	0.08-0.15	3.6-6.5	Low----------	0.32	4
Dogue	8-56	0.2-0.6	0.12-0.19	3.6-5.5	Moderate-------	0.28	
	56-62	0.6-6.0	0.05-0.14	3.6-5.5	Low----------	0.17	
DhA:*							
Dogue----------	0-8	2.0-6.0	0.08-0.15	3.6-6.5	Low----------	0.32	4
	8-56	0.2-0.6	0.12-0.19	3.6-5.5	Moderate-------	0.28	
	56-62	0.6-6.0	0.05-0.14	3.6-5.5	Low----------	0.17	
Urban land.							
DoA, DoB---------	0-10	2.0-6.0	0.06-0.10	4.5-5.5	Very low-------	0.20	4
Dothan	10-48	0.6-2.0	0.10-0.14	4.5-5.5	Low----------	0.28	
	48-65	0.2-0.6	0.08-0.12	4.5-5.5	Low----------	0.28	
DuB:*							
Dothan----------	0-12	2.0-6.0	0.06-0.10	4.5-5.5	Very low-------	0.20	4
	12-48	0.6-2.0	0.10-0.14	4.5-5.5	Low----------	0.28	
	48-65	0.2-0.6	0.08-0.12	4.5-5.5	Low----------	0.28	
Urban land.							
FeA, FeB, FeC----	0-8	6.0-20	0.06-0.09	4.5-5.5	Low----------	0.28	5
Faceville	8-11	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.37	
	11-62	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.37	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
FsB----------	0-30	>6.0	0.04-0.09	4.5-5.5	Low----------	0.20	5
Fuquay	30-35	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.20	
	35-65	0.06-0.2	0.10-0.13	4.5-5.5	Low----------	0.20	
FuC:*							
Fuquay----------	0-30	>6.0	0.04-0.09	4.5-5.5	Low----------	0.20	5
	30-35	0.6-2.0	0.12-0.15	4.5-5.5	Low----------	0.20	
	35-65	0.06-0.2	0.10-0.13	4.5-5.5	Low----------	0.20	
Urban land.							
GgB, GgC---------	0-5	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.43	3
Georgeville	5-38	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.37	
	38-52	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.43	
	52-64	0.6-2.0	0.05-0.10	4.5-5.5	Low----------	0.43	
GhC:*							
Georgeville-----	0-5	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.43	3
	5-38	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.37	
	38-52	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.43	
	52-64	0.6-2.0	0.05-0.10	4.5-5.5	Low----------	0.43	
Urban land.							
GmA----------	0-11	2.0-6.0	0.08-0.12	4.5-6.0	Low----------	0.20	5
Goldsboro	11-84	0.6-2.0	0.11-0.15	4.5-5.5	Low----------	0.24	
GnA:*							
Goldsboro-------	0-11	2.0-6.0	0.08-0.12	4.5-6.0	Low----------	0.20	5
	11-84	0.6-2.0	0.11-0.15	4.5-5.5	Low----------	0.24	
Urban land.							
GoE----------	0-3	2.0-6.0	0.10-0.15	4.0-6.0	Low----------	0.20	2
Goldston	3-13	2.0-6.0	0.10-0.15	4.0-6.0	Low----------	0.20	
	13-20	2.0-6.0	0.05-0.10	4.0-6.0	Low----------	0.20	
Gr----------	0-4	0.6-2.0	0.10-0.18	3.6-5.5	Low----------	0.10	---
Grady	4-62	0.06-0.2	0.12-0.16	3.6-5.5	Moderate-------	0.10	
GvB, GvC---------	0-10	2.0-6.0	0.07-0.10	4.5-6.5	Low----------	0.28	3
Grover	10-33	0.6-2.0	0.12-0.14	4.5-5.5	Low----------	0.32	
	33-60	---	---	---	----------	----	
HZ.*							
Hydraquents							
LkB, LkC, LkD----	0-70	>20	0.05-0.08	4.5-6.0	Very low-------	0.17	5
Lakeland	70-99	>20	0.03-0.08	4.5-6.0	Very low-------	----	
LmB, LmC, LmD----	0-29	6.0-20	0.06-0.10	5.1-5.5	Low----------	0.20	5
Lucy	29-32	2.0-6.0	0.10-0.12	4.5-5.5	Low----------	0.24	
	32-80	0.6-2.0	0.12-0.14	4.5-5.5	Low----------	0.28	
MkB----------	0-14	0.6-2.0	0.14-0.19	5.6-7.3	Low----------	0.28	4
Mecklenburg	14-31	0.06-0.2	0.12-0.14	5.6-7.3	Moderate-------	0.32	
	31-37	---	---	---	----------	----	
OeA, OeB, OeD----	0-10	2.0-6.0	0.06-0.08	4.5-6.0	Low----------	0.20	5
Orangeburg	10-50	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.24	
	50-64	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.24	
OsC----------	0-5	2.0-6.0	0.07-0.10	4.5-6.0	Low----------	0.24	5
Orangeburg	5-50	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.24	
	50-60	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.24	
Pm.*							
Pits							

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
Ra----------	0-16	6.0-20	0.07-0.10	4.5-6.5	Low----------	0.17	5
Rains	16-24	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24	
	24-65	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28	
Rh:*							
Rains----------	0-16	6.0-20	0.07-0.10	4.5-6.5	Low----------	0.17	5
	16-24	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24	
	24-60	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28	
Urban land.							
Ro----------	0-33	0.6-2.0	0.16-0.24	4.5-5.5	Low----------	0.28	4
Riverview	33-65	2.0-6.0	0.07-0.11	4.5-5.5	Very low-------	0.17	
Rp:*							
Riverview-------	0-33	0.6-2.0	0.16-0.24	4.5-5.5	Low----------	0.28	4
	33-65	2.0-6.0	0.07-0.11	4.5-5.5	Very low-------	0.17	
Urban land.							
Rr----------	0-5	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	----	---
Roanoke	5-48	0.06-0.2	0.10-0.19	4.5-5.5	Moderate-------	----	
	48-96	---	---	---	----------	----	
TwB, TwC, TwD----	0-54	6.0-20	0.05-0.10	4.5-5.5	Very low-------	0.17	5
Troup	54-80	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
TxC:*							
Troup----------	0-66	6.0-20	0.05-0.10	4.5-5.5	Very low-------	0.17	5
	66-86	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
Urban land.							
UaA,* Uc.* Udorthents							
Ud.* Urban land							
VaC,* VaD:*							
Vaucluse--------	0-8	6.0-20	0.04-0.08	4.5-5.5	Low----------	0.17	3
	8-20	0.6-6.0	0.10-0.15	4.5-5.5	Low----------	0.20	
	20-60	0.06-0.2	0.05-0.08	4.0-5.5	Low----------	0.17	
Ailey----------	0-25	6.0-20	0.03-0.05	4.5-6.5	Low----------	0.20	4
	25-29	0.6-2.0	0.09-0.12	4.5-5.5	Low----------	0.24	
	29-65	0.06-0.2	0.06-0.10	4.5-5.5	Low----------	0.17	
VuC,* VuD:*							
Vaucluse--------	0-9	6.0-20	0.04-0.08	4.5-5.5	Low----------	0.17	3
	9-19	0.6-6.0	0.10-0.15	4.5-5.5	Low----------	0.20	
	19-60	0.06-0.2	0.05-0.08	4.0-5.5	Low----------	0.17	
Urban land.							
WeC, WeD---------	0-4	2.0-6.0	0.10-0.18	4.5-5.5	Low----------	0.24	2
Wedowee	4-7	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.28	
	7-35	0.2-0.6	0.12-0.18	4.5-5.5	Moderate-------	0.28	
	35-45	---	---	---	----------	----	
WuC:*							
Wedowee---------	0-6	2.0-6.0	0.10-0.18	4.5-5.5	Low----------	0.24	2
	6-11	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.28	
	11-30	0.2-0.6	0.12-0.18	4.5-5.5	Moderate-------	0.28	
	30-45	---	---	---	----------	----	
Urban land.							

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
WuD:*							
Wedowee	0-4	2.0-6.0	0.10-0.18	4.5-5.5	Low	0.24	2
	4-7	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.28	
	7-35	0.2-0.6	0.12-0.18	4.5-5.5	Moderate	0.28	
	35-45	---	---	---	---	----	
Urban land.							
WvB:*							
Wickham	0-8	2.0-6.0	0.11-0.16	4.5-6.0	Low	0.20	5
	8-60	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.24	
	60-78	---	---	---	---	----	
Urban land.							

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
AgB, AgC, AgD----- Ailey	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Av---------- Altavista	C	Occasional	Very brief	Mar-Jul	1.5-2.5	Apparent	Dec-Mar	>60	---	Moderate	Moderate.
BO:*											
Bibb----------	C	Frequent----	Brief-----	Dec-May	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Moderate.
Osier----------	D	Common------	Brief-----	Dec-Apr	0.0-1.0	Apparent	Nov-Mar	>60	---	High-----	High.
Ca---------- Chastain	D	Frequent----	Very long	Dec-Apr	0-1.0	Apparent	Nov-May	>60	---	High-----	High.
CC:*											
Chewacla---------	C	Common------	Brief-----	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
Chastain---------	D	Frequent----	Very long	Dec-Apr	0-1.0	Apparent	Nov-May	>60	---	High-----	High.
CR:*											
Chewacla---------	C	Common------	Brief-----	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
Riverview--------	B	Common------	Brief-----	Dec-Mar	3.0-5.0	Apparent	Dec-Mar	>60	---	Low------	Moderate.
DgA---------- Dogue	C	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	High-----	High.
DhA:*											
Dogue----------	C	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	High-----	High.
Urban land.											
DoA, DoB---------- Dothan	B	None--------	---	---	3.5-4.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
DuB:*											
Dothan----------	B	None--------	---	---	3.5-4.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
Urban land.											
FeA, FeB, FeC----- Faceville	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
FsB---------- Fuquay	B	None--------	---	---	2.5-4.0	Perched	Jan-Mar	>60	---	Low------	High.
FuC:*											
Fuquay----------	B	None--------	---	---	2.5-4.0	Perched	Jan-Mar	>60	---	Low------	High.
Urban land.											
GgB, GgC---------- Georgeville	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
GhC:*											
Georgeville------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Urban land.											
GmA---------- Goldsboro	B	None--------	---	---	2.0-3.0	Apparent	Dec-Mar	>60	---	Moderate	High.
GnA:*											
Goldsboro--------	B	None--------	---	---	2.0-3.0	Apparent	Dec-Mar	>60	---	Moderate	High.
Urban land.											

See footnotes at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
GoE---------- Goldston	C	None--------	---	---	>6.0	---	---	20-40	Rippable	Moderate	High.
Gr**---------- Grady	D	None--------	---	---	+2-1.0	Apparent	Dec-Jun	>60	---	High-----	High.
GvB, GvC---------- Grover	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
HZ.* Hydraquents											
LkB, LkC, LkD----- Lakeland	A	None--------	---	---	>6.0	---	---	>72	---	Low------	Moderate.
LmB, LmC, LmD----- Lucy	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
MkB---------- Mecklenburg	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
OeA, OeB, OeD, OsC---------- Orangeburg	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Pm.* Pits											
Ra---------- Rains	B/D	None--------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High-----	High.
Rh:* Rains----------	B/D	None--------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High-----	High.
Urban land.											
Ro---------- Riverview	B	Common------	Brief-----	Dec-Mar	3.0-5.0	Apparent	Dec-Mar	>60	---	Low------	Moderate.
Rp:* Riverview--------	B	None--------	---	---	3.0-5.0	Apparent	Dec-Mar	>60	---	Low------	Moderate.
Urban land.											
Rr---------- Roanoke	D	Frequent----	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-May	>60	---	High-----	High.
TwB, TwC, TwD----- Troup	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
TxC:* Troup----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Urban land.											
UaA,* Uc.* Udorthents											
Ud.* Urban land											
VaC,* VaD:* Vaucluse---------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
Ailey----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
VuC,* VuD:* Vaucluse---------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
Urban land.											

See footnotes at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
WeC, WeD---------- Wedowee	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
WuC,* WuD:* Wedowee---------- Urban land.	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
WvB:* Wickham---------- Urban land.	B	None to rare	---	---	>6.0	---	---	>60	---	Moderate	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

** The plus sign preceding the range in depth to the water table means that the range in this soil is from 2 feet above the surface to 1 foot below.

TABLE 18.--ENGINEERING INDEX TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution							Liquid limit	Plasticity index	Moisture density		Percentage volume change		
			Percentage passing sieve--				Percentage smaller than--									
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture	Total	Swell	Shrink
										Pct		Lb/Ft^3	Pct	Pct	Pct	Pct
Altavista sandy loam: [1] (S68GA-121-005)																
Ap------- 0 to 6	A-2-4(00)	SM	100	100	63	25	18	11	9	--	NP	118	11	4.6	3.8	0.8
B21t-----10 to 28	A-4 (00)	SM-SC	100	100	79	40	32	30	27	23	7	115	14	7.2	4.3	2.9
B22t-----28 to 48	A-2-4(00)	SM-SC	100	100	59	28	26	22	20	25	7	120	11	5.2	4.8	0.4
Dogue loamy sand: [2] (S69GA-121-001)																
Ap------- 0 to 9	A-2-4(00)	SM	100	99	60	16	13	8	6	--	NP	113	13	5.0	3.8	1.2
B21t-----15 to 30	A-7-6(14)	CL	100	99	84	71	67	59	50	45	20	98	22	17.6	9.6	8.0
B22t-----30 to 41	A-6 (03)	SC	100	100	72	46	44	37	32	37	14	106	17	17.3	13.2	4.1
Riverview silt loam: [3] (S68GA-121-002)																
Ap------- 0 to 7	A-4 (10)	ML	100	100	99	92	81	50	35	39	8	91	24	27.3	20.4	6.9
B2-------14 to 23	A-6 (12)	ML	100	100	100	94	75	47	32	38	11	95	25	27.9	22.1	5.8
C--------31 to 42	A-4 (04)	ML	100	100	100	84	62	35	26	29	5	102	18	27.8	24.5	3.3

[1]Altavista sandy loam:
In field, 1 mile north of Butler Creek Bridge on new Savannah Road, 25 feet east of road.

[2]Dogue loamy sand:
On Gracewood Hospital Farm, 1.75 miles southeast from U.S. Highway 25 and Tobacco Road and 200 feet south of Spirit Creek.

[3]Riverview silt loam:
In cultivated field, 1.5 miles north of Butler Creek Bridge at Augusta levee, 1,000 feet east of levee.

TABLE 19.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Ailey	Loamy, siliceous, thermic Arenic Fragiudults
Altavista	Fine-loamy, mixed, thermic Aquic Hapludults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Chastain	Fine, kaolinitic, acid, thermic Typic Fluvaquents
Chewacla	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Dogue	Clayey, mixed, thermic Aquic Hapludults
Dothan	Fine-loamy, siliceous, thermic Plinthic Paleudults
Faceville	Clayey, kaolinitic, thermic Typic Paleudults
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Paleudults
*Georgeville	Clayey, kaolinitic, thermic Typic Hapludults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Goldston	Loamy-skeletal, siliceous, thermic, shallow Ruptic-Ultic Dystrochrepts
Grady	Clayey, kaolinitic, thermic Typic Paleaquults
*Grover	Fine-loamy, micaceous, thermic Typic Hapludults
Lakeland	Thermic, coated Typic Quartzipsamments
Lucy	Loamy, siliceous, thermic Arenic Paleudults
*Mecklenburg	Fine, mixed, thermic Ultic Hapludalfs
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Osier	Siliceous, thermic Typic Psammaquents
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Riverview	Fine-loamy, mixed, thermic Fluventic Dystrochrepts
Roanoke	Clayey, mixed, thermic Typic Ochraquults
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Vaucluse	Fine-loamy, siliceous, thermic Typic Fragiudults
Wedowee	Clayey, kaolinitic, thermic Typic Hapludults
*Wickham	Fine-loamy, mixed, thermic Typic Hapludults

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